FM 3-04

ARMY AVIATION

MARCH 2025

DISTRIBUTION RESTRICTION:

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This publication supersedes FM 3-04, dated 06 APRIL 2020.

HEADQUARTERS, DEPARTMENT OF THE ARMY

Foreword

While much of our Army's effort over the last two decades has involved lower-intensity contingencies or partner nation capability development, we must now focus on peer competition with other great power militaries around the world.

This environment brings greater opportunities in the air-ground littoral, the space between the earth and higher altitudes. The speed, range, and lethality of manned platforms is complemented by the persistence and continuous innovation of unmanned technology. However, with opportunity comes a variety of threats trying to prevent our continued dominance. In view of this, we undertook a complete rewrite of FM 3-04 to better describe aviation operations—both to our sister branches and the Joint force, and to our aviation leaders—as an integral member of the combined arms teams. My intent for this rewrite was threefold:

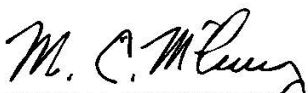
- Ensure Army Aviation is thoroughly nested within Army maneuver doctrine, so our aviators become "maneuverists"—experts in integrating manned and unmanned aviation into all aspects of the division's planning.
- Clarify the discussion on the seven Aviation core competencies and what we provide to ground forces, binned into the easy to remember categories of **see/sense**, **strike**, **move**, and **extend**.
- Rescind or clarify aviation-specific terms or concepts that are redundant to Army terminology, to remove artificial distinctions between aviation and ground maneuver—an example is the rescission of the term "air ground operations."

The original cross-domain solution since our inception, Army Aviation exists to support Soldiers on the ground. Aviation units maneuver as an integral member of the combined arms team, and deliver precision aerial fires. Aviation operations are reliant on the sacred trust between aviators and ground Soldiers. As such, we must be experts at four tasks. First, we must identify and exploit areas of enemy weakness (**see/sense**). Second, we must be able to maneuver to a decisive point on the battlefield and destroy critical enemy systems to enable the higher commander's intent (**strike**). Third, we must be able to rapidly place personnel and equipment in positions of relative advantage, and conduct aerial delivery of sustainment, for the supported commander (**move**). Finally, we must be able to increase standoff from threat systems, and extend command and control across great distances and complex terrain (**extend**).

Aviation leaders must sharpen their grasp of Army ground and aviation doctrine, to better apply judgment in its application. Doctrine is alive and evolving; continually refined as the rest of the DOTMLPF-P framework materializes. Accordingly, we will publish Change 1 to this document next year to capture the significant aviation force structure changes recently approved.

Additionally, as our leaders apply the tactics and procedures laid out in FM 3-04, they will learn lessons and innovate some new methods. As the Commanding General of the Combined Arms Center notes, "a lesson learned is only a lesson noted unless it changes behavior." Thus, it is critical that our aviation force maintains positive two-way communications with the Aviation Center of Excellence, especially the Directorate of Training and Doctrine, to help evolve our doctrine to best meet the needs of Army forces in future conflict.

ABOVE THE BEST!



MAJOR GENERAL, UNITED STATES ARMY
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Field Manual
No. 3-04

Headquarters
Department of the Army
Washington, DC, 27 March 2025

Army Aviation

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*This publication supersedes FM 3-04 dated 06 April 2020.

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Preface

FM 3-04 is the Army's capstone doctrinal publication for conducting aviation operations. Its purpose is to provide context for employing and integrating Army Aviation into multi-domain operations. It describes how Army Aviation forces, as the most agile member of the combined arms team, create and exploit relative advantages to achieve objectives, defeat enemy forces, and consolidate gains on behalf of Army and joint force commanders across all strategic contexts. FM 3-04 provides a foundation for subordinate training doctrine, professional military education, leader development, and individual and collective training. Together with ADP 3-0, ADP 3-90, FM 3-0, and FM 3-90, this manual provides the foundation for how Army Aviation forces operate in combat.

The principal audience for FM 3-04 is all members of the profession of arms. Commanders and staffs of Army headquarters serving as joint task force or multinational headquarters should also refer to applicable joint or multinational doctrine concerning the range of military operations and joint or multinational forces. Trainers and educators throughout the Army will also use this publication.

Commanders, staffs, and subordinates ensure their decisions and actions comply with applicable United States, international, and in some cases, host-nation laws and regulations. Commanders at all levels ensure their Service members operate according to the law of armed conflict and the rules of engagement. (See FM 6-27/MCTP 11-10C for legal compliance.)

FM 3-04 uses joint terms where applicable. Selected joint and Army terms and definitions appear in both the glossary and the text. Terms for which FM 3-04 is the proponent publication (the authority) are marked with an asterisk (*) in the glossary. When first defined in the text, terms for which FM 3-04 is the proponent publication are boldfaced and italicized, and the definitions are boldfaced. When first defining other proponent definitions in the text, the term is italicized with the proponent publication designator and number at the end of the definition. Following uses of the term are not italicized.

FM 3-04 applies to the Active Army, Army National Guard/Army National Guard of the United States, and United States Army Reserve unless otherwise stated.

The proponent of FM 3-04 is the United States Army Aviation Center of Excellence (AVCOE); the preparing agency is the Directorate of Training and Doctrine, AVCOE. Send comments and recommendations on Department of the Army (DA) Form 2028 (*Recommended Changes to Publications and Blank Forms*) to Commander, AVCOE, ATTN: ATZQ-TDD, Fort Novosel, Alabama 36362-5263; by e-mail to usarmy.novosel.avncoe.mbx.doctrine-branch@army.mil; or submit an electronic DA Form 2028.

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Introduction

Army Aviation is the division's and corps' most maneuverable force. Army Aviation forces are uniquely capable of rapidly and simultaneously impacting the deep, close, and rear operations of multiple echelons. Army Aviation forces provide ground commanders with land-focused air capabilities that are fundamental to multidomain operations. Army Aviation executes combined arms maneuver as an integral member of the combined arms team. Army Aviation's primary focus on synchronized aviation and ground maneuver (with inherent fires integration) is due to the sacred trust between aviators and ground Soldiers. The Aviation Branch exists to complement ground forces.

Army Aviation, as the original cross-domain solution since our inception, is already well-versed in the concept of domain interdependence. Army Aviation forces are postured to help division and corps achieve convergence by conducting operations against numerous decisive points and creating multiple dilemmas for the enemy. Lift assets provide physical agility, endurance, and depth to ground forces. Manned and unmanned reconnaissance platforms contribute to decision dominance by providing information, critical for understanding the operational environment (OE), that allows more agile decision-making and smoother transitions.

FM 3-04 describes the core competencies, organizations, operations, sustainment, capabilities, tactics, and procedures of Army Aviation forces. This document updates previous doctrine and describes how Army Aviation forces creates and exploits relative advantages to achieve objectives, defeat enemy forces, and consolidate gains on behalf of Army commanders against peer threats. This publication focuses on the employment of Army Aviation through combined arms maneuver in support of multidomain operations. Although FM 3-04 focuses on large-scale operations, it encompasses all aspects of aviation support to multidomain operations across all strategic contexts (competition, crisis, and armed conflict).

FM 3-04 contains five chapters and two appendices:

- **Chapter 1** introduces Army Aviation's role in multidomain operations. It describes seven core competencies of Army Aviation and presents unique aspects of aviation operations throughout the multidomain OE.
- **Chapter 2** provides an overview of each of the current various organizations and unique staff officers in Army Aviation. It also provides references for commanders and staffs on command and support relationships, command post operations, and integration of Army Aviation with joint airspace users.
- **Chapter 3** discusses and provides examples of the various missions which may be conducted by Army Aviation units. It adds discussion of aerial-delivered mine operations and considerations for aviation operations in a contested airspace environment. Attacks are no longer described as against enemy forces in close friendly contact or out of friendly contact, in favor of the new terms close attack and deep attack. Additionally, attacks are no longer formally distinguished between hasty and deliberate, but rather planning in general, for all aviation missions, is described along a continuum of hasty to deliberate.
- **Chapter 4** provides an overview of Army Aviation's requirements for and contributions to sustainment operations. It includes expanded discussion of forward arming and refueling (FARP) operations in a combat environment.
- **Chapter 5** provides basic discussion of the capabilities, requirements, and limitations of each of the aircraft and unique support systems operated by Army Aviation units.
- **Appendix A** discusses aviation operations and planning resources.
- **Appendix B** discusses aviation considerations to risk management.
- **Appendix C** discusses special operations aviation.

Introductory table 1, page xii, outline changes to Army terminology reflected in FM 3-04.

Introductory table 1. New, modified, and removed terms

Air ground operations	No longer used as a defined Army term.
Area for forward arming and refueling (AFAR)	Adds new Army term.
Close attack	Adds new Army term.
Deep attack	Adds new Army term.
Manned unmanned teaming	FM 3-04 modifies definition.
United States Army Aviation Center of Excellence (AVCOE)	FM 3-04 modifies acronym.

Chapter 1
Army Aviation's Role in Multidomain Operations

SECTION I – MULTIDOMAIN OPERATIONS

1-1. *Multidomain operations* are the combined arms employment of joint and Army capabilities to create and exploit relative advantages to achieve objectives, defeat enemy forces, and consolidate gains on behalf of joint force commanders (FM 3-0). Army Aviation integrates into multidomain operations by conducting operations as the aviation maneuver force of the combined arms team.

1-2. Army Aviation operations are based on domain interdependence. *Combined arms* is the synchronized and simultaneous application of arms to achieve an effect greater than if each element was used separately or sequentially (ADP 3-0). Combined arms mitigates friendly vulnerabilities while creating and exploiting relative advantages. Domain interdependence expands this concept; Army Aviation both provides capabilities within the land, maritime, air, and cyberspace domains to the Army and Joint Force, and employs or is supported by capabilities from all domains.

1-3. Army Aviation, through the seven core competencies, uniquely leverages the tenets and imperatives of operations. (Refer to FM 3-0 for a detailed description of both and section IV of this chapter for a crosswalk with core competencies.) The operational tenets of agility, convergence, endurance, and depth should be built into all plans, while the nine imperatives are actions Army forces must take to be successful. Employing the complimentary and reinforcing effects of multidomain *maneuver* (movement in conjunction with fires [ADP 3-0]) presents the enemy with multiple dilemmas.

1-4. Specifically, effective combined arms operations require the full integration of air and ground maneuver as a combined arms team. Understanding the capabilities of Army Aviation throughout the OE through the human, information, and physical dimensions allows planners to best leverage aviation's strengths throughout all operations. (Refer to FM 3-0 for more information regarding the OEs, dimensions, and deep, close, and rear operations.) As a key component of the ground scheme of maneuver, Army Aviation achieves interdependence with ground forces through shared understanding of the OE and commander's intent, as well as through the integration or synchronization of warfighting functions, (clearly defined triggers and conditions for employment) Command and support relationships with defined roles and responsibilities maximize the capabilities of each element of the combined arms team and offsets another's limitations. More detailed planning and rehearsals are required when the combined arms team is newly formed. Agility, speed of action, and mission success are significantly enhanced when—

- Effective habitual relationships are established.
- Liaisons are embedded throughout the operations process.
- Procedures are standardized and practiced.
- A common operational picture is maintained.
- Mutual trust is built through effective relationships and shared understanding.

SECTION II – CHALLENGES

1-5. Army Aviation forces must be organized, trained, and equipped to meet worldwide challenges against a full range of threats across the strategic context of competition, crisis, and armed conflict. However, readiness to conduct large-scale combat operations against a peer threat is the greatest challenge to our force today. Such operations are incredibly demanding in terms of operational lethality, tempo, and survivability. Every domain (air, land, maritime, space, and cyberspace) may be contested by a capable adversary who has likely invested significant resources learning from recent United States joint force operations. State and non-state actors threaten with conventional and unconventional weapons, potentially including chemical, biological, radiological, and nuclear (CBRN) weapons capabilities. The enemy also employs anti-access and area denial tactics which restrict freedom of maneuver using advanced radar, infrared, and LASER air defense systems, as well as long-range fires; friendly air superiority can no longer be assumed.

1-6. On the ground, traditional support nodes and assembly areas are vulnerable to precision long-range fires, threat aviation (manned and unmanned), and irregular warfare methods alike. Aviation's unique maintenance requirements make frequent survivability moves especially challenging. Thus, protection is a key interdependency between the aviation brigade and division.

1-7. Army Aviation must be lethal, survivable, and adaptable to provide combat power to the ground commander in large-scale combat operations. Refer to FM 3-0 for more details on peer adversaries and the operational environment.

1-8. Army Aviation's maneuverability inherently challenges our ability to maintain communication links due to the vast distances aviation platforms routinely travel. Reliable over the horizon communications may not be available in a denied, degraded, or disrupted space operational environment (also known as D3SOE). Aviation units must be capable of fighting isolated from higher, lateral, and subordinate headquarters during periods of degraded communication and when operations are widely distributed.

1-9. Aviation forces cannot afford to wait on any specific materiel solution to solve all the multidomain challenges. Commanders at echelon must consider: what information do they truly need (from higher and subordinate commands) to execute their missions, and with what degree of timeliness and fidelity? What are the simplest, most redundant means to communicate it? How many decisions must an aviation commander make, versus how many can they delegate down, during a specific operation? Commanders and staffs must weigh the tradeoffs between command and control (C2) system effectiveness and command post protection.

1-10. OEs in combat are characterized by uncertainty, degraded communications, and fleeting windows of opportunity, so aviation leaders must have a bias for action. To retain our agility and contributions to the combined arms team's decision dominance, aviation culture must break free from risk-aversion and embrace the disciplined initiative and prudent risk inherent in the philosophy of mission command. (Refer to ADP 6-0 for more details.)

Current Lethality Challenges: Russian Integrated Defense in Depth

Since Operation Barbarossa in 1941, Soviet and Russian military thinkers have prized area denial tactics. Emerging from World War II, Soviet Deep Battle doctrine required synchronization of precise ground and air fires with maneuver to mass on critical targets at a decisive moment. Deep Battle endured throughout the Cold War and continues to influence current Russian doctrine. Russia's current concept applies Deep Battle in a defensive nature to protect a critical asset in three dimensions.

In practice, however, Russia's current approach employs not a single protective layer, but multiple mutually supporting capabilities which include manportable, short-, medium, and/or long-range air defense systems; manned and unmanned aircraft; tube and rocket artillery; ballistic and cruise missiles; direct fire systems; and information warfare capabilities. The sum of these systems is an integrated network of combined arms capabilities designed to deter enemy attack or inhibit freedom of action from tactical to strategic levels.

At the tactical level, integrated air defenses attempt to deter or defeat low altitude rotary wing (RW) and unmanned systems operations. An integrated fires complex employs artillery systems for counter-fire and fire support, and electromagnetic warfare (EW) assets seek to disrupt enemy communications and operations.

At the operational level, air defense systems employ a blend of short- and medium-range missiles alongside long-range precision fires. Attacks target deep critical assets such as aviation headquarters, tactical assembly areas, and sustainment sites. Russia's intent at the operational level is to prevent brigade-sized elements from effectively concentrating combat power, resupplying, or reorganizing.

At the strategic level, the Russian integrated defense in depth combines lethal and non-lethal capabilities to target major air and seaports, assembly areas, high-level headquarters, regional networks and communications, high-performance aircraft, and surface ships. Cyber and other information warfare elements attempt to disrupt operations or deny access to information anywhere in the theater through targeted or mass attacks. This multi-layered network seeks to deter enemy attack by presenting a prohibitively costly theater of operations; if deterrence fails, it seeks to impede an enemy force from ever organizing to challenge Russian actions.

Throughout the Russian Ukrainian conflict, this approach has morphed throughout its expeditionary employment. Any shortcomings of this approach should not be judged too quickly as the Russian forces have continued to learn and adapt the strategy. Also, it should be noted that the integration of multiple protective capabilities is a challenge shared by all militaries.

SECTION III – CORE COMPETENCIES

1-11. As a fully integrated member of the combined arms team, Army Aviation forces are organized, trained, and equipped to maneuver against the full range of threats during armed conflict in support of offense, defense, and stability operations. Army Aviation's inherent mobility, speed, range, flexibility, and lethality provide the combined arms team with multiple options to seize, retain, create, and exploit relative advantages. Army Aviation is unique in its ability to maneuver across the full width, breadth, and depth of the battlefield framework. With lethality, speed, and reach, it can operate across all six warfighting functions in support of commanders' missions and objectives, as well as affect multiple defeat mechanisms via multiple core competencies.

1-12. The following are the seven core competencies of Army Aviation:

- Provide accurate and timely information collection.
- Provide early warning, reaction time, and maneuver space.
- Destroy, dislocate, disintegrate, or isolate enemy forces.
- Air assault.
- Air movement.
- Aerial evacuation.
- Enable command and control.

1-13. Army Aviation's seven core competencies can be distilled into four categories: see, strike, move, and extend. Each Army Aviation mission and capability nests into one of these more simplified categories for ease of conceptualization and understanding. All aviation operations are executed on a 24 to 96 hour timeline, requiring hasty or deliberate planning considerations according to FM 3-90. See ATP 3-04.1 for more information on aviation mission planning.

SEE: PROVIDE ACCURATE AND TIMELY INFORMATION COLLECTION

1-14. This core competency describes Army Aviation's ability to conduct manned and unmanned reconnaissance in support of both air and ground maneuver. Reconnaissance is a mission undertaken to obtain information about the activities and resources of an enemy or adversary, or to secure data concerning the meteorological, hydrographic, geographic, or other characteristics of a particular area, by visual observation or other detection methods (JP 2-0). See FM 3-98 for more details on reconnaissance operations. *Information collection* is an activity that synchronizes and integrates the planning and employment of sensors and assets as well as the processing, exploitation, and dissemination of systems in direct support (DS) of current and future operations (FM 3-55).

1-15. Reconnaissance missions are most effective when commanders integrate Army Aviation capabilities into the information collection planning and execution process. Effective combined arms teaming better assists the commander in determining enemy intent and answering the commander's critical information requirements. All Army Aviation forces, regardless of assigned mission, have a responsibility to observe and/or report all required information rapidly and accurately to enable the commander's understanding of the current situation. When assigned roles within the main effort, supporting effort, or reserve force, reconnaissance assets are never left in reserve by utilizing reconnaissance management (FM 3-98). This can be accomplished with organic aviation assets, regardless of assigned mission or synchronization with additional assets from other members of the combined arms team.

1-16. Through the conduct of reconnaissance or movement to contact, Army Aviation provides the commander with accurate and timely information on enemy force disposition, composition, strengths, and weaknesses. Army Aviation also provides information on population patterns of life, ground routes and mobility corridors, dense urban terrain, infrastructure, and manmade or natural obstacles to answer a commander's priority intelligence requirements (PIRs). In addition to answering PIRs, Army Aviation's speed and agility provide a unique ability to answer friendly force information requirements for forces that are geographically dispersed increasing shared understanding. All Army Aviation forces understand the importance and use of essential elements of friendly information. While not commander's critical information requirements (PIR/friendly force information requirements), essential elements of friendly information denies enemy formations critical information used to target friendly forces.

1-17. Army Aviation reconnaissance and attack units conduct reconnaissance as a maneuver force to fight for information that provides commanders with a position of relative advantage in physical, information, and human dimensions. Commanders employ reinforcing and complementary aviation capabilities to increase depth and breadth of aviation reconnaissance and maneuver, increase persistence over the reconnaissance objective, increase ability to gain and maintain enemy contact, increase survivability, and provide more options to develop the situation with enhanced maneuver, fires, and C2.

1-18. Army Aviation assault units may conduct infiltration and extraction of dismounted elements conducting detailed reconnaissance of designated reconnaissance objectives. Ground forces or dismounted elements may also emplace remote sensors on key avenues of approach and terrain features; evacuate

captured enemy personnel for intelligence exploitation; or conduct continuous resupply of ground reconnaissance elements to maximize continuous reconnaissance forward. Assault crews can additionally report rapidly and accurately any information/phenomena observed that may enable commander decision making regardless of assigned mission or location in the OE.

1-19. Aviators and unmanned aircraft systems (UAS) operators leverage organic sensors to provide their primary output of timely reporting and assessment to commanders. Commanders seeking access to raw sensor data must augment Army Aviation units with the appropriate communications capabilities to connect to the larger intelligence architecture. Examples of raw sensor data include full-motion video, synthetic aperture radar/moving target indications, and signals intelligence. Signal and military intelligence units coordinate with and augment Army Aviation units to establish the necessary communication connections and implement reporting procedures. Together, these units position the communication systems and processing, exploitation, and dissemination capabilities at the most effective locations to ensure sensor data and information are effectively analyzed across the Army intelligence enterprise.

SEE: PROVIDE EARLY WARNING, REACTION TIME, AND MANEUVER SPACE

1-20. This core competency describes Army Aviation's ability to conduct manned and unmanned security in support of both air and ground maneuver. *Security operations* are those operations performed by commanders to provide early and accurate warning of enemy operations, to provide the forces being protected with time and maneuver space within which to react to the enemy, and to develop the situation to allow commanders to effectively use their protected forces (ADP 3-90). Refer to FM 3-98 for more details on security operations.

1-21. Army Aviation attack and reconnaissance units perform security tasks such as screens or area security with organic assets or as a sub-element of a larger combined arms security force conducting all security tasks. When properly task-organized, they may conduct cover or guard tasks as a separate maneuver force in an assigned area of operations (AO). Employing manned and unmanned systems with attack and reconnaissance aircraft enables the security force to expand the breadth and depth of the screen, maximizing economy of force. ***Manned unmanned teaming*** **(MUM-T) is the synchronized employment of Soldiers, manned and unmanned air and ground vehicles, robotics, and sensors to achieve an objective.** As the situation develops, Army Aviation attack and reconnaissance units can quickly transition from the screen to counterintelligence or conduct attacks without becoming decisively engaged.

STRIKE: DESTROY, DISLOCATE, DISINTEGRATE, OR ISOLATE ENEMY FORCES

1-22. Army Aviation conducts attacks during the execution of offensive, defensive, and stability operations in support of the combined arms team throughout the depth and breadth of the AO. Army Aviation attacks support division or corps level operations to destroy, dislocate, disintegrate, or isolate the enemy. These four actions are *defeat mechanisms*—[the] method[s] through which friendly forces accomplish their mission against enemy opposition (ADP 3-0). Defeat mechanisms are broad means commanders use to visualize how they plan to defeat enemy forces and are most useful at division and above. Commanders at brigade and below translate defeat mechanisms into tactics. Army Aviation, as a division or corps asset, is in a unique position to directly support the defeat mechanisms through tactical action. Refer to FM 3-0 for more details on defeat mechanisms.

1-23. *Destroy* is a tactical mission task that physically renders an enemy force combat ineffective until it is reconstituted (FM 3-90). Army Aviation accomplishes this through organic direct fires or serving as observers for indirect fires. Destruction and the threat of destruction, heightened through the human dimension by the presence of attack aviation, lie at the core of all the defeat mechanisms and make them more compelling.

1-24. Aviation forces can attack from the individual platform up through a full company or battalion based on destruction criteria established by the ground forces they are supporting. Destruction criteria for lower echelons focus on weapon systems, combat platforms, and personnel, while the criteria used by divisions and above focus on enemy formations and critical capabilities. Though physical destruction, such as a

catastrophic kill which is usually the goal, planners and crewmembers should not rule out the utility of lesser levels that still achieve desired effects.

1-25. *Dislocate* is to employ forces to obtain significant positional advantage in one or more domains, rendering the enemy's dispositions less valuable, perhaps even irrelevant (FM 3-0). Typically, the impact of dislocation increases when the friendly force exploits advantages in multiple domains. Army Aviation can contribute not just through attack platforms but through air assaults as well since commanders often achieve dislocation through deception and by placing forces in locations where enemy forces do not expect them. Army Aviation can negate terrain advantages of the enemy by moving friendly forces into advantageous positions faster than the enemy can react. Achieving dislocation requires an understanding how enemy forces are oriented and how quickly they can shift, an area where Army Aviation reconnaissance assets contribute significantly.

1-26. *Disintegrate* is to disrupt the enemy's command and control, degrading the synchronization and cohesion of its operations (FM 3-0). Disintegration attacks the cohesion of enemy formations and prevents enemy unity of effort leading to a degradation of the enemy's capabilities or will to fight. Commanders can achieve disintegration by targeting enemy functions essential to the threat's ability to act, such as command structure, communications systems, the linkages between them, and the capabilities they control. Attack Aviation and UAS provide the division the ability to shape deep operations in support of disintegration, while support to maneuver units in the close area can contribute as part of a holistic and deliberate erosion of enemy cohesion across multiple domains and objectives.

1-27. *Isolate* is to separate a force from its sources of support to reduce its effectiveness and increase its vulnerability to defeat (ADP 3-0). Isolation can encompass multiple domains and all three dimensions. Examples include denying enemy forces access to the electromagnetic spectrum, intelligence, and resupply/reconstitution reducing their ability to communicate and degrading situational awareness. Attack Aviation can fix a unit or its support, and air assaults can contribute to encirclement operations. Army Aviation must not discount the impact of the human dimension; simply flying in a specific area can contribute to the enemy's sense of isolation and even modest attacks can have immense psychological effects.

MOVE: AIR ASSAULT

1-28. Army Aviation conducts air assaults during offensive, defensive, and stability operations throughout the depth and breadth of the AO. An *air assault* is the movement of friendly assault forces by RW aircraft to engage and destroy enemy forces or to seize and hold key terrain (JP 3-18). Air assaults are combined arms operations conducted to gain a positional advantage, envelop, or turn enemy forces. At the tactical level, air assault operations emphasize seizing terrain, destroying enemy forces, and interdicting enemy withdrawal routes. Refer to FM 3-99 for more details on conducting air assaults.

1-29. Army Aviation assault and heavy lift units, supported by attack and reconnaissance units, rapidly reposition personnel and equipment to enable the combined arms team to strike over extended distances and terrain to attack the enemy where and when it is most vulnerable. Air assaults extend the tactical and operational reach of the combined arms team by overcoming the effects of terrain, achieving surprise, and isolating, dislocating, or destroying enemy forces by rapidly massing combat power at the maneuver commander's time and place of choice.

MOVE: AIR MOVEMENT

1-30. An *air movement* is the air transport of units, personnel, supplies, and equipment including airdrops and air landings and is not synonymous with air assault (JP 3-36). Army Aviation assault, general support (GS), heavy lift, and fixed-wing (FW) units conduct air movement of personnel, leaders, critical supplies, equipment, and systems during the conduct of offensive, defensive, stability, and defense support civil authorities (DSCA) operations throughout the depth and breadth of the AO.

1-31. Army Aviation RW aircraft conduct air movement using both internal and external (sling) loads. The supported unit provides pickup zone (PZ) and landing zone (LZ) control, serviceable sling sets, load rigging, ground movement, and certification. Refer to TM 4-48.09/MCRP 4-11.3E, VOL I/NTTP 3-04.11/AFMAN 11-223 (I), VOL I/COMDTINST M13482.2B for more information regarding sling loads. Army Aviation FW aircraft conduct air movement with internal loads between improved airfields to move limited critical

personnel and supplies in the AO or area of interest. The loading and ground movement of critical supplies and personnel for FW operations is typically controlled and executed through the arrival/departure airfield control group.

- Air movement operations can be conducted in support of a variety of operations, to include—
- Foreign humanitarian assistance.
- Foreign disaster relief.
- Homeland defense.
- Non-combatant evacuation.
- Routine and emergency resupply of combat units.
- Movement of barrier materials and munitions in the defense.
- Movement of fuel, ammunition, and personnel over extended lines of communications (LOCs) to support the offense.
- Battlefield circulation of key leaders.

1-32. Air movement operations reduce risk to ground logistics units through economy of force, enable operations in areas with limited ground LOCs, allow faster repair and sustainment of combat power, and support forward positioning of key leaders to exercise mission command and control.

1-33. Evacuation missions can be conducted in support of a variety of operations, to include foreign humanitarian assistance, foreign disaster relief, DSCA, non-combatant evacuation, and all combat operations across the range of military operations and competition continuum.

MOVE: AERIAL EVACUATION

1-34. As a vital component of the overall health service support (HSS) mission, medical evacuation (MEDEVAC) provides the continuum of care between roles of medical care. MEDEVAC is performed on dedicated and properly marked medical platforms (ground or air), providing timely and efficient movement to and between medical treatment facilities, with medical personnel providing en route care of the wounded, injured, or ill. DA is the sole component directed to provide intra-theater aeromedical evacuation (AE) in the patient movement system within the Department of Defense. Intra-theater AE is conducted by Army air ambulance units in support of the joint force during execution of offensive, defensive, stability, and DSCA operations throughout the depth and breadth of the AO. Army Aviation brigades and battalions provide oversight of Army medical air ambulance units conducting intra-theater AE according to combatant commander priorities, theater evacuation policies, and Department of Defense directives. Surgeon's provide medical and technical control at echelon of coordinating, synchronizing, integrating, and planning Army Health Systems, to include air ambulance capabilities, on behalf of the commander.

1-35. The speed, flexibility, and en route care capabilities of Army AE provides the HSS more options in the allocation of medical treatment facilities (MTFs) by mitigating the effects of extended distances to or between MTFs while maintaining a continuum of care. AE is a non-combat, humanitarian mission and is provided special protections under the Law of Armed Conflict and the Geneva Conventions and are restricted from conducting combatant missions. Refer to AR 40-3 for additional information on the restricted use of Army air ambulances.

1-36. Army Aviation utility, cargo, and FW units may conduct casualty evacuation (CASEVAC) on order or when required in support of the joint force. *CASEVAC* is the unregulated movement of casualties aboard any vehicle (JP 4-02). Any platform can be dedicated to or designated in support of CASEVAC operations. Opportune use of non-dedicated/designated platforms is the lowest level of CASEVAC operations. In contrast to MEDEVAC assets, CASEVAC assets may or may not include the provision of en route care, depending on the availability of medical augmentation personnel and equipment. CASEVAC may include carry-on medical equipment to accompany medical personnel, but the equipment and supplies are dependent upon availability at the time of the mission. As a nonmedical platform, CASEVAC aircraft retain their legal combatant status in an AO; therefore, use of these assets includes the acceptance of additional risk to the patient (who is a non-combatant). Without standardized equipment or en route medical care, CASEVAC lacks the assurance of continuity of care when moving a patient to an MTF.

1-37. Even with these limitations, CASEVAC is an essential part of the overall patient movement system and may be the first step in moving an injured Soldier from the point of injury or utilized to clear an MTF of

patients to prepare for continued operations. MEDEVAC and CASEVAC support require detailed assessment and planning to achieve an effective patient movement plan across a division or corps area of operations. The tactical situation informs the commander's risk decisions on how far forward an aircrew may conduct a MEDEVAC/CASEVAC mission, but as a general guideline no further forward than the brigade support area.

1-38. Army personnel recovery (PR) serves to preserve combat power by returning personnel to their formations and returning the Army's will to take the fight to the enemy. Army Aviation units can be tasked, as part of a larger division or corps effort, to conduct immediate, deliberate, and externally supported PR missions by transporting PR security elements or recovery forces. This tasking may also include AE, attack, reconnaissance, and C2 support.

EXTEND: ENABLE COMMAND AND CONTROL

1-39. Army Aviation enhances C2 by extending the tactical network across the AO and enhances shared understanding of the OE through—

- Accurate and timely reporting.
- Transportation of message couriers.
- Dedicated aerial C2 support platforms.
- Ground and air communications relay (retransmitting) packages.
- Dissemination of full motion video sensor information (if adequately resourced by higher echelons).
- Management of controlled airspace through air traffic services (ATS).

1-40. *Command and control* (C2) is the exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission (JP 1). Army Aviation enables the maneuver commander to better understand, visualize, describe, direct, lead, and assess operations over extended ranges and in complex terrain. Maneuver commanders use Army Aviation C2 aircraft to position where they can best impact the operation. Attack and reconnaissance units conducting movement to contact, attack, reconnaissance, and security operations provide the maneuver commander with timely and accurate information via long-range communications, as applicable to the operational environment and mission set. Timely reporting enables the commander to understand and visualize the terrain, friendly and enemy forces throughout the AO and across multiple domains. Army Aviation liaisons and embedded staffs assist the maneuver commander with visualizing and describing how best to employ Army Aviation as a member of the combined arms team.

SECTION IV – ARMY AVIATION IN THE OPERATIONAL FRAMEWORK

1-41. To clearly visualize and articulate Army Aviation operations, commanders typically apply the three models of the *operational framework*, a cognitive tool to develop shared understanding and describe the commander's visualization of how Army Aviation operates in time, space, purpose, and resources in the concept of operations (ADP 1-01). Refer to FM 3-0 for more information regarding operational framework. The following three models commonly used to build the operational framework do not limit any of the core competencies of Army Aviation:

- Commanders assign areas to subordinate units based on mission, friendly forces available, enemy situation, and terrain.
- Commanders designate deep, close, and rear operations based on time, space, and purpose.
- Commanders designate main effort, supporting effort, and reserve to designate shifting and prioritization of resources.

ASSIGNED AREAS

1-42. The assigned area is a designated area that commanders are assigned to conduct operations. From this designated area, they assign subordinate units smaller contiguous or noncontiguous assigned areas based on the commander's visualization of the operation and the unit's ability to influence what happens within the area. Within the assigned area, commanders use control measures to coordinate fires and maneuver and organize operations. There are three types of assigned areas that a commander may use are:

- Area of operations.
- Zone.

- Sector.

1-43. Refer to FM 3-0 for a detailed description of each type of area.

1-44. When task-organized with ground maneuver forces and appropriate staff augmentation (such as fires and intelligence), Army Aviation battalions or brigades can be assigned an AO for a limited period of time, serving as the maneuver task force headquarters conducting reconnaissance and security operations or during offensive or defensive operations in an economy of force. Assigning an area to an aviation unit streamlines aviation maneuver and enables detailed integration with supporting assets such as joint fires or FW aviation. When aviation units are assigned one of their own areas, they accept the responsibilities specified in FM 3-0 for that AO. (Refer to FM 3-0 regarding responsibilities for an AO.)

1-45. Aviation units typically operate across the entire assigned area of the supported unit. Maneuver throughout the area is governed by graphic control measures such as:

- Phase lines.
- Airspace coordinating measures.
- Fire support coordination measures included in the airspace control plan and daily airspace control order.

1-46. These control measures permit simultaneous operations and converging of effects against the enemy. If under operational control (OPCON) or tactical control (TACON) of a maneuver force, the aviation unit operates within that unit's boundaries unless other coordination is made. The aviation unit develops air and ground plans in conjunction with that maneuver force. If not OPCON or TACON to a unit, the aviation unit must coordinate not only airspace and terrain management but also locations for FARPs, areas for forward arming and refueling (AFARs), command posts (CPs), and radio retransmission sites.

DEEP, CLOSE, AND REAR OPERATIONS

1-47. The deep, close, rear operations model describes how operations are synchronized in time, space, and purpose (figure 1-1, page 10). An echelon's focus—not necessarily their physical location—determines whether they are conducting deep, close, or rear operations. As a divisional asset, Army Aviation can simultaneously contribute to the deep, close, and rear operations of multiple echelons.

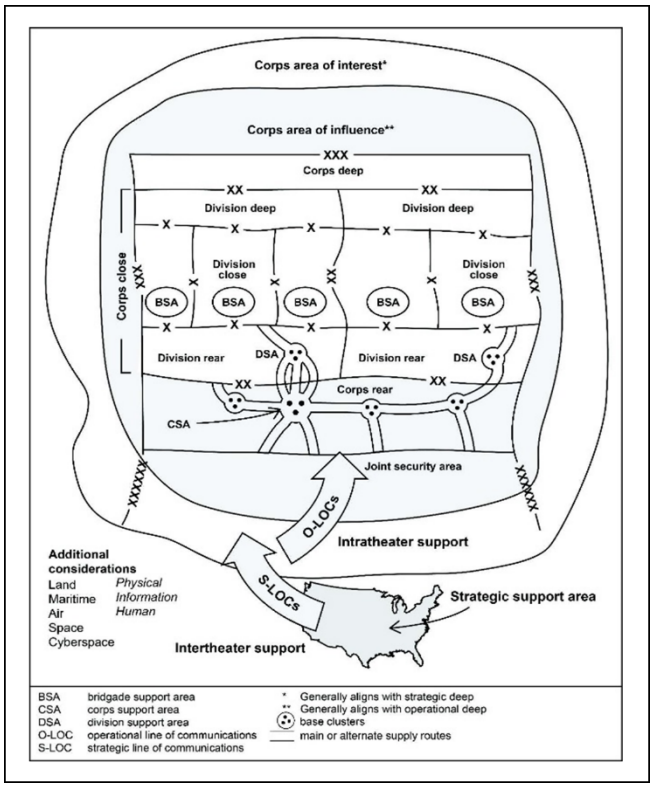

Figure 1–1. Notional corps deep, close, and rear areas with contiguous divisions

1-48. *Deep operations* are tactical actions against enemy forces, typically out of direct contact with friendly forces, intended to shape future close operations and protect rear operations (FM 3-0). Aviation deep operations involve actions to destroy, dislocate, disintegrate, or isolate enemy forces and capabilities before they can be used effectively against friendly forces. They may set the conditions for success in the close area or enable future operations. Operations in the deep area might disintegrate the movement of operational reserves; prevent an enemy from employing long-range cannon, rocket, or missile fires; or attack a high-payoff target. Enemy forces in deep areas are not necessarily out of contact in a multidomain environment. Deep areas can also include the spaces between non-contiguous AOs or beyond the designated boundaries of ground maneuver units in contiguous assigned areas. Fire support coordination and airspace coordinating measures (ACMs) are critical considerations when planning and conducting deep operations. For more information on deep operations, refer to ATP 3-94.2.

1-49. Aviation deep operations may include—

- Divisional and corps-level attacks to destroy, dislocate, disintegrate, or isolate enemy forces or high value capabilities that are out of friendly contact.
- Reconnaissance operations by manned and/or unmanned aircraft to obtain combat information to answer PIR on the terrain, enemy, or civilian populations.
- Air assaults of conventional or special operations forces to seize an objective or key terrain or destroy an enemy force.
- Insertions of conventional and special operations forces to recover isolated personnel, emplace sensors, conduct raids, establish special reconnaissance positions, or to conduct partisan linkup.
- Recovery of designated personnel in deep areas.

1-50. *Close operations* are tactical actions of subordinate maneuver forces and the forces providing immediate support to them, whose purpose is to employ maneuver and fires to close with and destroy enemy forces (FM 3-0). They are conducted within a subordinate ground commander's AO. These AOs can be contiguous or non-contiguous. Army Aviation executes combined arms maneuver during close operations as a member of the combined arms team in support of offensive and defensive operations per FM 3-90. Army Aviation can conduct all missions and tasks when operating in the close area, to include—

- Reconnaissance.
- Security.
- Troop movement/mobility.
- Countermobility.
- Tactical deception.

1-51. *Rear operations* are tactical actions behind major subordinate maneuver forces that facilitate movement, extend operational reach, and maintain desired tempo (FM 3-0). Army Aviation operations in the rear area typically focus on air movement, MEDEVAC, and C2 support, but may also include reconnaissance, attacks, and security operations if there is a threat in the rear area or to enable continuous consolidation of gains (area security/minimum essential stability tasks). When conducting attacks, reconnaissance, and security operations, Army Aviation typically operates as a combined arms team with the tactical combat force (TCF). If properly task-organized with ground maneuver or security forces, Army Aviation can operate as the TCF headquarters for the support area.

1-52. A critical part of rear operations are *support area operations*—the tactical actions securing lines of communications, bases, and base clusters that enable an echelon's sustainment and command and control (FM 3-0). MEDEVAC, utility, cargo, troop mobility, and movement of material and supplies is a key contribution of Army Aviation to sustain the force in large-scale combat operations. Aviation is particularly well postured to contribute to these operations, both for sustainment functions and for security.

AIRSPACE CONSIDERATIONS

1-53. Airspace control and airspace management are additional tasks of the C2 warfighting function and is a continually refined activity within the operations process. Effective airspace control and airspace management enables the simultaneous use of airspace by as many users as possible while minimizing risk. Dedicated airspace control or airspace management elements are present at each echelon from brigade through theater-level. If the Airspace Control Authority delegates control of a designated piece of airspace for an area of operations, the AO owner exercises airspace control through the integration of coordination measures such as ACMs and fire support coordination measures in accordance with the echelon airspace control appendices of the operational order. Refer to FM 3-52 for more information.

1-54. Airspace control or management elements by echelon are as follows:

- Theater-The theater Joint Air Operations Center is both the control and management element responsible for current operations and airspace planning for the entire joint area of operations. Refer to ATP 3-52.2/MCRP 3-20.1/NTTP 3-56.2/AFTTP 3-2.17 for Air Operations Center organization and responsibilities.
- Army service component commander-the battlefield coordination detachment is the Army's representative in the Joint Air Operations Center but has neither control nor management airspace authority. The battlefield coordination detachment facilitates planning, coordination, and execution of joint air-ground actions in support of Army operations. Refer to ATP 3-09.13 for battlefield coordination detachment organization and responsibilities.
- Corps-The corps airspace element is an airspace management element which participates in airspace planning and develops standard operating procedures and airspace control annexes that help standardize airspace control operations among subordinate units. Refer to FM 3-52 for further information. Normally, the corps is not delegated airspace control authority for its area of operations.
- Division-Airspace actions at the division level are split between the Joint Air-Ground Integration Center (JAGIC) and the division airspace element. Airspace control authority delegation for the division's area of operations will be explicitly stated in either the theater airspace control plan or the airspace control order. Refer to FM 3-52.
  - JAGIC-The JAGIC is a multi-service element within the division current operations integration cell which handles the current operations aspects of procedural airspace control execution and deconfliction. Refer to ATP 3-91.1/AFTTP 3-2.86 for JAGIC organization and responsibilities.
  - Division airspace element-the division airspace element handles airspace planning and future operations. Refer to FM 3-52 for further information.
- Brigade-Brigades are not delegated airspace control authority for their AO, meaning they cannot themselves approve airspace measures within their AO. Brigades instead have the responsibility to

manage the airspace over their AO by continuously monitoring airspace users in or transiting their AO. Airspace actions at the brigade level are shared between the air defense and airspace management (ADAM) cell and the brigade aviation element (BAE). Refer to FM 3-96 for additional information.
    - ADAM-The ADAM cell has primary responsibility for airspace management of users in the brigade's area of responsibility. The ADAM cell assists in airspace planning and is the portal through which brigade ACM requests are submitted to the theater airspace control system. Refer to ATP 3-01.50 for ADAM cell organization and responsibilities.
    - BAE-The BAE has primary responsibility for airspace planning and the integration of aviation into the brigade's scheme of maneuver. The BAE, cooperatively with the ADAM cell, ensures efficient management of the brigade's airspace and battle tracking of airspace users.
- Battalion-At battalion level, the operations section (S-3) plans and coordinates airspace requirements for the battalion to include:
    - Establishing staff responsibility for airspace management from personnel assigned to the S-3 section.
    - Reviewing and resolving planned and immediate ACM requests.
    - Submitting to ADAM/BAE all planned and immediate ACMs requests.
    - Refer to FM 3-52 for further information.
- Company-At company level, the company commander and air mission commander are responsible for ensuring airspace supporting aviation missions has been coordinated and requested. Refer to ATP 3-04.1 for further information.

1-55. Airspace elements continuously monitor all airspace users to support their operations and those transiting through the airspace over their AOs. This continuous situational awareness ensures that commanders can react to any situation requiring immediate use of airspace to include unplanned aircraft launch, aerial delivery of fires, immediate ACM, and indirect fire missions. The air mission commander is responsible for coordinating airspace (if not coordinated through pre-mission planning) that encompasses location, missile flight route, and target location. When supporting a ground maneuver unit, the air mission commander coordinates with the ground maneuver commander and brigade combat team (BCT)/ADAM cell. When assigned an AO, the air mission commander coordinates through the CAB ADAM cell. The CAB ADAM cell must communicate regularly with the BCT ADAM cell to coordinate and relay ACMs required to maintain situational awareness for the CAB commander.

1-56. Effective airspace control is only possible if airspace users plan and coordinate their airspace use for situational awareness throughout the joint force. Airspace planning must be an integral part of aviation maneuver planning and should be included in planning, rehearsals, and execution checklists. Simple, well understood airspace controls which do not require two-way communications with a command-and-control node may provide the most redundant and effective method of airspace coordination. Commanders must ensure detailed planning and coordination with the supported unit and the next higher airspace element to integrate their manned and unmanned airspace requirements into unit airspace plans and the airspace control order. Common coordination measures for Army Aviation are as follows:

- *Air control point*-A point that is defined and used for navigation, command and control, and communication.
- *Air corridor*-An air travel route used to route aviation combat elements between such areas as forward arming and refueling points, holding areas, and battle positions.
- *Airspace control area*-A formal or informal, three-dimensional block of airspace in a target area in which friendly aircraft are reasonably safe from friendly, indirect, surface-to-surface fires.
- ***Area for forward arming and refueling*** **(AFAR)-A temporary site developed to increase survivability, equipped with the proper resources, and deployed as far forward, or widely dispersed, as tactically feasible to provide fuel and ammunition necessary for the sustainment of aviation maneuver units in combat.**
- *Contact point*-In air operations, the position of which a mission leader makes radio contact with an air control agency.
- *Coordinating altitude*-An airspace coordinating measure that uses altitude to separate users and as the transition between different airspace control elements (JP 3-52).

- *Coordination level*-A procedural method to separate fixed- and rotary-wing aircraft by determining an altitude below which fixed-wing aircraft normally will not fly (JP 3-52).
- *Forward arming and refueling point*-A temporary facility that is organized, equipped, and deployed to provide fuel and ammunition necessary for the employment of aviation maneuver units in combat (JP 3-09.3).
- *Landing zone*-A specified zone of defined dimensions used for landing aircraft.
- *Pickup zone*-A specified zone used for landing aircraft to pick up troops, equipment, or supplies.
- *Restricted operations zone (ROZ)*-Airspace reserved for specific activities in which the operations of one or more airspace users is restricted.
- *Standard Army aircraft flight route (SAAFR)*-A route established below the coordination level to facilitate the movement of Army aircraft.
- *Unmanned aircraft (UA)*-An airspace created specifically for unmanned aircraft operations to include the launch/recovery point, enroute airspace, and operational airspace.

1-57. Coordination measures that could affect aviation mission planning include (figure 1-2):

- *Low level transit route*-A bi-directional air travel route through areas of forward-deployed friendly forces.
- *Minimum risk route (MRR)*-A temporary corridor of defined dimensions recommended for use by high-speed, fixed-wing aircraft that presents the minimum known hazards to low-flying aircraft transiting the combat zone.
- *Surface to surface munition (SSM)/surface to surface missile system (SSMS)*-A coordination measure of defined dimensions established for surface-to-surface munition or missile system launch points commonly called a position area for artillery (PAA).

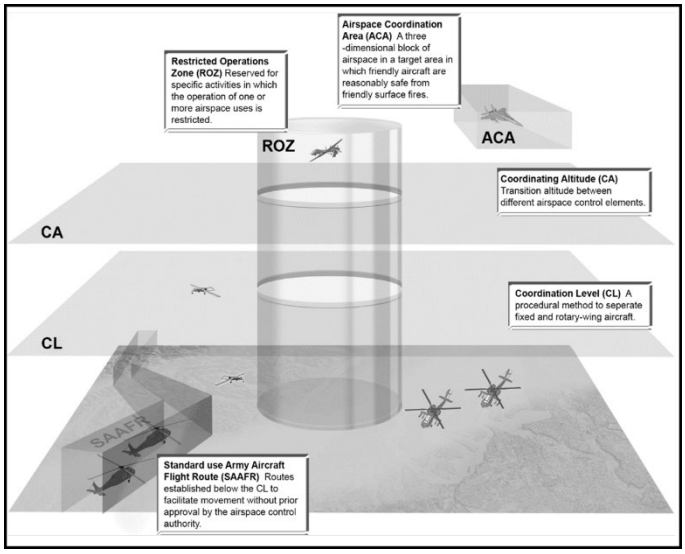

Figure 1–2. Common Army airspace coordinating measures

MAIN EFFORT, SUPPORTING EFFORT, AND RESERVE

1-58. The use of main and supporting efforts provides prioritization of support and resources among subordinate units. The main effort is a designated subordinate unit whose mission at a given point in time is most critical to overall mission success (ADP 3-0). The division's or corps' designated main effort is typically weighted heavily with Army Aviation combat power to achieve their mission. Army Aviation units may also be designated as the main effort during specified phases of an operation when assigned as the maneuver headquarters operating independently from ground maneuver or task organized as the maneuver headquarters of the combined arms team.

1-59. A *supporting effort* is a designated subordinate unit with a mission that supports the success of the main effort (ADP 3-0). Commanders provide supporting efforts with the minimum combat power necessary to accomplish the mission; consequently, supporting efforts may be resourced with less Army Aviation combat

power than the main effort. Army Aviation units may also be designated as the supporting effort during specified phases of an operation when assigned as the maneuver headquarters operating independently from ground maneuver or task organized as the maneuver headquarters of the combined arms team assigned as a supporting effort.

1-60. A reserve is that portion of a body of troops that is withheld from action at the beginning of an engagement to be available for a decisive movement (ADP 3-90). Aviation units may be designated as part of the reserve, or more likely, will be tasked to support the reserve once it's committed and becomes the main effort.

TENETS OF OPERATIONS

1-61. FM 3-0 describes tenets of operations as "desirable attributes that should be built into all plans and operations, and they are directly related to how the Army's operational concept should be employed" (FM 3-0). Army Aviation forces, when properly integrated, increase the combat power and effectiveness of any operation. The Aviation force accomplishes this by executing our core competency categories of **See**, **Strike**, **Move**, and **Extend**. *Integration* is the arrangement of military forces and their actions to create a force that operates by engaging as a whole (JP 1, Volume 1). The level of aviation integration determines how well Army forces are employed in complementary and reinforcing ways. Army Aviation units can support hasty missions but typically offer the most success when integrated early in the strategic effort. For more information on the tenets of operations, refer to FM 3-0.

1-62. *Agility* is the ability to move forces and adjust their dispositions and activities more rapidly than the enemy (FM 3-0). Aviation's core competency of **See** supports the staff's agility by providing the reconnaissance or assessment (such as battle damage assessment) needed to generate or adjust plans, providing commanders options and answering PIRs. The speed at which manned and unmanned aviation assets can provide critical information oriented on both the enemy and friendly forces allows commanders and staff to quickly adapt to changes and exploit opportunities. **Strike** competencies provide the division and corps commander the ability to rapidly maneuver an attack element to defeat the enemy, either in whole or in detail depending on the mission variables, at the time and place of the commander's choosing. **Move** competencies support physical agility by maneuvering ground forces quickly, bypassing obstacles and placing them where the enemy does not expect them. This includes air movements and air assaults of personnel and equipment, such as artillery pieces. **Extend** competencies support agile decision-making through the extension of command and control, allowing commanders to position themselves at the decisive point when and where needed. Aviation staff and liaison officers (LNOs) integrated into the maneuver commander's staff can provide real time capabilities and offer options that make the joint force more agile than the enemy.

1-63. *Convergence* is an outcome created by the concerted employment of capabilities from multiple domains and echelons against combinations of decisive points in any domain to create effects against a system, formation, decision maker, or in a specific geographic area (FM 3-0). Army Aviation's ability to **See**, **Strike**, **Move**, and **Extend** from team through brigade, using the air domain to cross the land and maritime domains, contributes significantly to convergence. During multidomain operations, Army Aviation conducts all missions and tasks across our core competencies in DS, GS, TACON, or OPCON to the ground maneuver forces.

1-64. *Endurance* is the ability to persevere over time throughout the depth of an operational environment (FM 3-0). This tenet is oriented on the friendly force. Aviation's core competency of see, by conducting reconnaissance and security operations, helps preserve friendly force combat power, enabling the ground force commander to anticipate requirements and make the most effective and efficient use of resources. Aviation's **Strike** core competencies, employed in either a hasty or deliberate manner, further provides mutual support to units that might otherwise become isolated or defeated in detail. **Move** core competencies rapidly repositions sustainment resources across extended LOCs, posturing units for follow-on operations no matter how austere the battlefield. **Move** operations can support friendly reconstitution as well as casualty backhaul, preserving combat power. **Extend** core competencies enable commanders to maintain C2 across dispersed forces or in communications-degraded environments. The sum of aviation's core competency assists Army forces in enduring longer than the enemy can.

1-65. The tenet of depth orients on enemy locations and dispositions across all domains. Aviation operations occur throughout the width and breadth of the AO and provide capabilities that can impact the enemy's echeloned forces across multiple domains. Aviation is the principal maneuver force employed by divisions and corps to extend their *operational reach*, the distance and duration across which a force can successfully employ military capabilities (JP 3-0). Army Aviation **Sees** and **Strikes** further into the enemy's AO than most ground formations, **Moves** across the rear to the deep area at echelon, and **Extends** C2 for the ground maneuver commander. Depth is best achieved when aviation attacks, air assaults, and FARP/AFAR placements are deliberate, iterative division-level considerations.

IMPERATIVES

1-66. FM 3-0 describes imperatives as actions Army forces must take to defeat enemy forces and achieve objectives at acceptable cost. Army Aviation is a maneuver element that facilitates each of the nine imperatives. Refer to FM 3-0 for more information regarding operational imperatives.

SEE YOURSELF, SEE THE ENEMY, AND UNDERSTAND THE OPERATIONAL ENVIRONMENT

1-67. Commanders and staffs increase understanding of how Army Aviation enhances their forces through combined arms training and thorough rehearsals. Aviation liaisons fulfill friendly force information requirements, describing current capabilities and limitations for better integration into not just the scheme of maneuver, but fires, intelligence, protection, and sustainment as well. Army Aviation's inherent multidomain employment (operating from the air domain to enable operations in the land and maritime domains, leveraging capabilities from the space and cyber domains) allows the ground force commander to better see themselves in relation to the operational environment and other members of the combined arms team. Army Aviation's **See** core competencies, oriented on the friendly force as security operations, increases friendly commander situational awareness (to include how friendly positions appear to enemy air), while **Extend** allows the commander to traverse vast terrain to better visualize future operations and interact with their dispersed formations.

1-68. The **See** core competencies also help commanders see the enemy and understand the operational environment at echelon. The information collected from manned and unmanned aerial reconnaissance develops critical information requirements such as PIRs, filling in ground force information gaps (examples include enemy, terrain, and infrastructure). Aviation units, as part of the combined arms team, overcome enemy efforts to deny information collection. Employing UAS platforms, commanders can gather information over long distances with low threat to friendly forces. Manned platforms develop the situation through action and fight for information. In a denied environment, aviation can overcome the challenges inherent with long-range communications by physically maneuvering to a place where critical information can be passed to the element that needs it most.

ACCOUNT FOR BEING UNDER CONSTANT OBSERVATION AND ALL FORMS OF ENEMY CONTACT

1-69. Army Aviation units are dispersed when forward deployed to minimize enemy observation and the risk of enemy contact. Aerial platforms are staged and based at the discretion of the commander but typically well behind the forward line of troops to avoid enemy contact and detection. Aviation staffs must appreciate how much organic sustainment and C2 capabilities, forward arming and refueling sites, CPs, and UAS ground control equipment are targeted by the enemy. Planners must assume that the majority of manned and even unmanned flights will be observed via one or more of the nine forms of contact, and that the patterns and routes flown will telegraph critical locations as well as unit boundaries and fire support control measures (Refer to FM 3-0 for descriptions of the forms of contact).

1-70. Basic fieldcraft and camouflage techniques must become second nature down to the lowest level, as well as emission control measures. Refer to JP 3-85, ADP 6-22, and ATP 3-50.21 for more information on fieldcraft and emission control. Army Aviation has long used execution checklists (exchecks) for air assaults and major operations; these pro-word execution matrices are no longer merely for mitigating callouts on crowded radio nets, but a critical means of emission control. Refer to ADP and FM 5-0 for more on execution matrices.

CREATE AND EXPLOIT RELATIVE PHYSICAL, INFORMATION, AND HUMAN ADVANTAGES IN PURSUIT OF DECISION DOMINANCE

1-71. FM 3-0 describes decision dominance as "a desired state in which a force generates decisions, counters threat information warfare capabilities, strengthens friendly morale and will, and affects threat decision making more effectively than the opponent." All aviation core competency categories (**See**, **Strike**, **Move**, **Extend**) apply in support of this imperative, our actions in the physical dimensions significantly impact the human dimension. For example, the visible or presumed presence of aircraft generates considerable cognitive effects on a population and affects the enemy's decision-making, while bolstering friendly unit morale and will to fight.

1-72. During armed conflict, aviation capabilities provide division/corps commanders decision dominance by enabling timely decisions by friendly commanders that retain and exploit the initiative. Aviation does this through deep and close attacks, reconnaissance and security, air assault, and C2. In each strategic context, aviation performs key leader circulation, sustainment operations, reconnaissance, and security to provide a relative advantage for decision dominance. Across the competition continuum, aviation also assists in the countering of foreign malign information through the public release of digital imagery captured from manned and unmanned aviation platforms.

MAKE INITIAL CONTACT WITH THE SMALLEST ELEMENT POSSIBLE

1-73. When at all possible, aviation units make initial contact with unmanned platforms, developing the situation to determine the right time to handover to manned platforms or the combined arms team. In this regard, the core competency of see also implies sense. With thorough threat analysis from the S-2, AMSO, and proper fused mission planning, aviation elements maneuver to avoid enemy threats that cannot be destroyed though organic fires or support from the joint team. Aviation mission planners avoid potential weapon engagement zones with pre-mission planning software and use maneuvering techniques to escape enemy engagements if inadvertently encountered.

1-74. Conversely, aviation maneuver either organically or as part of the combined arms team can also serve to compel enemy forces to react and reveal their intentions. For example, in a movement to contact, enemy engagements are expected and planned for. Refer to chapter 3 and FM 3-90 for more information on movement to contact. Additionally, when other Army or Joint assets have already identified a viable target, Army Aviation forces may elect to project as much combat power as possible (such as a maximum destruction attack) to capitalize on surprise and its inherent physical and human dimension impacts.

IMPOSE MULTIPLE DILEMMAS ON THE ENEMY

1-75. Aviation's agility and depth across all core competencies present enemy forces with simultaneous dilemmas, making the friendly main effort difficult to discern and forcing the enemy to commit forces where it may not be advantageous to do so. Tactical deception efforts, such as false insertions during air assault operations, mislead enemy battlefield intelligence operations. When employed with other members of the combined arms team to **See**, **Strike**, **Move**, and **Extend**, aviation units offer multiple courses of action to confuse or dilute the response of enemy forces.

ANTICIPATE, PLAN, AND EXECUTE TRANSITIONS

1-76. Aviation reconnaissance (**See**) answers the commander's PIR, identifying triggers for decision points and transitions. Reconnaissance (**See**), attack (**Strike**), and lift and cargo (**Move**, **Extend**) assets may be on standby to execute branches and sequels when planned accordingly. Additionally, aerial C2 positions the commander in the best time and place on the battlefield to make key decisions. The sum of aviation core competencies enable commanders to transition focus due to planned or unforeseen changes, reinforcing success or preventing defeat.

DESIGNATE, WEIGHT, AND SUSTAIN THE MAIN EFFORT

1-77. Division and corps commanders designate and weight the main effort with the appropriate resources and support required for a specified period of time based on priorities and circumstances. Those resources often include aviation forces, either task organized as part of the ground force maneuver headquarters or assigned a direct support role. Refer to FM 3-0 for more on command and support relationships. Commanders

can sustain the main effort through rapid aerial resupply (**Move**) or fires (**Strike**). Reconnaissance aircraft (**See**) supply information for commanders' critical information requirements to outpace reaction time from enemy forces. Predetermined events can trigger the employment of aviation assets to weight the main effort when preapproved by the commander. This reduces time to sustain the main effort.

Consolidate Gains Continuously

1-78. Army Aviation's agility, endurance, and depth make it uniquely suited to consolidating gains at every echelon. Possible aviation tasks in support of this imperative span the entire range of core competencies, from attacks against bypassed forces (**Strike**) to air movements, air assaults, or evacuation missions (**Move**). Aviation assets not otherwise engaged in close and deep operations can conduct reconnaissance and security (**See**) in the rear area (for example, to identify new LOCs, verify the status of existing LOCs, identify bypassed forces, potential staging and assembly areas, or other operationally significant terrain). As offensive operations push boundaries forward, aviation facilitates complex C2 (**Extend**) to help commanders balance consolidating gains with continuing operations.

Understand and Manage the Effects of Operations on Units and Soldiers

1-79. Army aircrews employ several techniques to manage the effects of operations. Commanders and instructor and/or standardization pilots/operators manage crew assignment at the individual level to provide the best aircrew to support the ground force at any given time. Other factors such as a culture of fighter management ensures aircrews are allowed time to rest and mitigates effects of sustained combat so they may be alert for future operational demands.

SECTION V – OPERATIONAL ENVIRONMENT

1-80. To shape the OE, prevent conflict, succeed in large-scale combat operations, and consolidate gains, Army Aviation leaders and units must be enabled with the training, leadership, and technologies necessary to accomplish the mission. Trained leaders and formations that are fully capable of operating under ambiguous and often unknowable conditions, equipped with advanced technologies and capabilities, ensure that Army Aviation remains a unique and asymmetric advantage for the Army and the United States.

1-81. The *operational environment* is a composite of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander (JP 3-0). The OE comprises many interrelated variables which include all domains as well as the three dimensions. The OE should be expected to be complex and dynamic, where aspects of it may be unknown and constantly changing. Additionally, the OE may be analyzed differently from the different levels of warfare. Some aspects of warfare continue to evolve based on missions, emerging technologies, or the enemy's capabilities, objectives, or resolve. However, Army Aviation leaders should anticipate these changes alongside continuities such as the principles of war, tenets of operations, and Army Aviation's core competencies.

1-82. Commanders and staffs initially analyze an OE using the nine multidomain operations imperatives. Refer to FM 3-0 for more information. Leaders employing Army Aviation forces must also understand the unique opportunities and constraints of aviation operations in the context of the threat and the multidomain battlefield.

THREAT

1-83. A *threat* is any combination of actors, entities, or forces that have the capability and intent to harm United States forces, United States national interests or the homeland (ADP 3-0). Within the OE, Army Aviation can expect to encounter a wide range of threats. The intermixing of multiple threat elements, coupled with the operational and mission variables create a complex and dynamic OE. Threats seek to disrupt Army Aviation operations through terrain denial, air route interdiction, and intentional disruption of FARPs/AFARs, LZs, PZs, tactical assembly areas, airfields, and UAS sites.

1-84. Threats can include nation states, national alliances, paramilitary or military forces, and/or individuals or groups of individuals. When threats execute their intent to do harm to the United States, they become enemies. The diversity of threats across the land, air, maritime, space, and cyberspace domains to United

States security and vital interests increases the need for Army forces to be prepared to conduct operations short of conflict as well as succeed during large-scale combat operations when required.

PEER THREATS

1-85. Peer threats are adversaries or enemies with capabilities and capacity to oppose United States forces across multiple domains world-wide or in a specific region where they enjoy a position of relative advantage. When preventing conflict with a peer threat fails, Army Aviation must be ready to penetrate enemy systems throughout the depth of the operational area to enable operational and tactical maneuver. This penetration and subsequent destruction, dislocation, disintegration, or isolation of enemy capabilities contributes toward the achievement of the joint force commander's (JFC's) strategic objectives.

1-86. These adversaries typically employ resources to attack friendly vulnerabilities using various combinations of the five broad methods described below. For more on these methods, refer to FM 3-0.

- **Information warfare**. Information warfare is a term used to refer to the threat's use of activities such as cyberspace operations, EW, deception, or psychological operations to manipulate the information environment. Peer threats attempt to manipulate or distort information to present false narratives and disrupt friendly decision making.
- **Preclusion**. Peer threats take specific actions to preclude certain operations. Examples of preclusion include employing tactics and systems to prevent friendly entry into an operational area (anti-access) or to impede friendly freedom of action within an operational area (area denial).
- **Isolation**. Peer threats may attempt to isolate friendly forces in various ways to prevent them from accomplishing the mission. Isolation may involve action in a physical domain, or it may involve space or cyberspace as well. This may be accomplished through denying mobility with obstacles or CBRN weapons. It may also be accomplished through preventing or limiting the flow of information, or by conducting deception operations.
- **Sanctuary**. Sanctuary refers to a method of putting threat forces beyond the reach of friendly attack, and is accomplished by some combination of political, legal, and physical boundaries that restrict friendly freedom of action. Peer threats may exploit air defense networks, complex terrain, dispersion, international borders, or information to protect some or all of their forces for a specific period of time.
- **Systems warfare**. Using a systems approach to warfare means the peer threat identifies specific critical capabilities for attack to affect failure in a larger friendly system. Examples of this might include the use of EW to disrupt UAS operations or CBRN attacks against specific ports of entry to prevent friendly forces from flowing into theater.

1-87. Peer threats to aviation include guided or unguided direct or indirect fires, anti-aircraft artillery, manportable air defense systems (MANPADS), surface-to-air missiles (SAMs), EW capabilities, cyber, CBRN, and manned or unmanned aircraft. Peer threats present significant challenges to employment of any unmanned or manned aircraft. The number one threat to Army Aviation remains to be surface to surface fires due to the requirement for large tactical assembly areas and sustainment nodes. Some peer threat systems and techniques are described below.

- **Anti-access and area denial**. Anti-access strategies use long-range capabilities and systems to prevent the joint force's penetration into an operational area, while area-denial strategies seek to hinder subsequent operations within the operational area. Combined, these actions and capabilities create the effect of standoff, which prevents friendly influence in an AO. Peer threats employ multi-layered integrated air defense systems (IADS) with long-range precision fires and other systems to challenge the joint force.
- **IADS**. IADS target aircraft during all phases of an operation. These systems traditionally employ anti-aircraft artillery or SAMs. Anti-aircraft artillery systems provide the capability to fire-exploding rounds of 20 millimeter or greater which use visual, electro-optical, infrared (IR), or radar for acquisition and ballistic solutions that can engage aviation systems up to high altitudes. SAMs are short- to long-range air defense systems using radar and/or electro-optical/IR acquisition and/or guidance. SAMs can engage all types of aviation systems up to high altitudes. SAMs are typically mounted on dedicated platforms, including stationary sites, wheeled- or tracked vehicles, or maritime platforms. SAMs have the potential for employment as a component of an integrated air defense system with supporting early warning and acquisition radar providing cueing; however,

several systems are fielded that can operate autonomously with onboard acquisition and targeting/guidance capabilities. Key to any IADS is the employment of an integrated radar network with the capability to detect incoming targets and employ the appropriate engagement platform at the lowest possible echelon.

- **MANPADS**. MANPADS are shoulder-fired, point-defense guided missile systems using the IR or ultra-violet spectrum with IR, ultra-violet, laser, or optical guidance that can engage aviation systems. MANPADS can be employed dismounted or mounted on ground vehicles, manned and unmanned aircraft, or maritime platforms, and are generally limited to the operator's ability to visually acquire and track aircraft prior to initiating launch. Peer threat maneuver divisions typically employ MANPADS in a ratio of 6 MANPADS launchers per maneuver battalion, plus an additional 18 launchers in the air defense brigade (short range). Response time of a MANPADS gunner can be significantly reduced if the systems are integrated into the IADS.
- **Enemy aircraft**. In addition to air-to-air capabilities designed to find and destroy Army aircraft, FW and RW threat systems may be employed to attack aviation assembly areas, LZ/PZs, UAS ground control equipment, and FARPs/AFARs with aerial-delivered fires to disrupt aviation maneuver and C2 across the AO. UAS pose additional unique threats to include reconnaissance and surveillance of Army Aviation ground and air operations, employment as improvised explosive devices against stationary and slow-moving aircraft or ground operations, and hazards to flight in congested areas such as airfields and high use air corridors.
- **Cyber and electromagnetic warfare**. The Army's modernized equipment relies heavily on space-based or internet-connected assets which include navigation, communications, and battle tracking systems. A space-based global positioning system (GPS) provides critical information for all warfighting function information systems. Army Aviation employs numerous advanced systems, many of which may be built into aircraft or ground control stations. Electromagnetic warfare is a primary threat system to Army UAS by detecting UAS aircraft and control stations to jam navigation and command links. Other systems are critical pieces of C2 equipment in unit CPs. Peer threat capabilities to deny, degrade, or disrupt friendly access to information greatly hinder the ability to maintain tempo by conducting C2 of dispersed forces. In addition to disrupting access to information systems, a peer threat may employ more traditional EW techniques such as meaconing, interference, jamming, or intrusion (MIJI) on radio systems. Units should utilize appropriate communications security methods to minimize susceptibility to electromagnetic attacks. For further operations in denied, degraded, or disrupted space operating environments, refer to FM 3-14 or the Center for Army Lessons Learned.
- **CBRN**. Both state and non-state actors may employ CBRN attacks as a method to deny access to a given area or to create mass casualty events for friendly forces. The proliferation of missile technology has enabled many states to acquire delivery systems which can deter action, deny access to specific regions, or strike friendly locations directly. Army Aviation is particularly susceptible to CBRN attacks given its large footprint, vulnerability when on the ground, the increased risk conducting aviation operations under CBRN conditions, and the difficulty in decontaminating aircraft after an attack.
- **Anti-radiation munitions**. Anti-radiation munitions (ARMs) are active homing projectiles designed to detect and home on a radio emission source. Although initially intended for active engagement of emitting radar systems, ARMs may be programmed and used to attack emitters employed on Army Aviation aircraft. Anti-radiation munitions may be employed from threat RW and FW aircraft, as well as ground and maritime surface platforms to engage aviation systems up to high altitudes.
- **Directed energy**. Directed-energy threats include laser designators, laser range finders, and missile guidance in beam-riding munitions. Directed energy weapons, to include anti-personnel, anti-sensor, and anti-material, use transmitted energy to disrupt, deny, or destroy an aircraft or aircrew member. The scope of directed energy weapons ranges from commercial off-the-shelf handheld laser pointers to high power/frequency acoustic and radio frequency transmitters. The employment of anti-sensor and anti-material systems is normally for point defense of crucial equipment or facilities with employment from vehicles or fixed positions.
- **Explosive hazards**. During LSCO, unexploded ordnance can be expected to pose a hazard on aircraft operating areas to include LZs, PZs and FARPs/AFARs. It is critical that reconnaissance

identifies explosive hazards before aviation operations commence. Additionally, aircraft munitions that malfunction can also pose a hazard to an aircraft and its personnel and cargo. Aviation units should coordinate with supporting explosive ordnance disposal units to render safe explosive hazards. See ATP 4-32 for additional information on explosive ordnance disposal operations.

HYBRID THREATS

1-88. A *hybrid threat* is the diverse and dynamic combination of regular forces, irregular forces, terrorist forces, or criminal elements unified to achieve mutually benefitting threat effects (ADP 3-0). It captures the complexity and blurring of the traditional elements of conflict. The hybrid threat employs traditional, unconventional, and hybrid strategies to threaten Army Aviation operations in support of the combined arms team. Hybrid threats to aviation may include improvised explosive devices, cyber capabilities, anti-tank guided missiles, passive detection, and directed energy weapons. Hybrid threats also seek to exploit constrained rules of engagement, weather and environmental limitations, multinational caveats, and other influencing political factors, while simultaneously disrupting friendly use of precision navigation and information networks. Coupling traditional and non-traditional threat weapons, hybrid threats constantly seek to adapt their tactics, techniques, and procedures to gain asymmetric advantages to overcome Army Aviation's overmatch at the point of contact.

1-89. Hybrid threats traditionally employ unguided weapons such as small arms, heavy machine guns (12.7 to 14.5 millimeter), rocket propelled grenades, and modified air-to-surface rockets against Army aircraft. These systems generally have reduced probabilities of hit against aircraft operating at higher altitudes in more permissive environments. Hybrid threats have limited access to more sophisticated weapons but may also employ anti-tank guided missiles, MANPADS, or improvised explosive devices carried by UAVs to target aircraft. Hybrid threats continue to seek low-cost commercial capabilities to disrupt/degrade communications, navigation, and precision munitions employment. In addition to commercial off-the-shelf adaptation, peer and near-peer threats possess specific capabilities dedicated to jamming and interference. Hybrid threat aviation capabilities may include military and civilian RW and FW aircraft and military or commercial off-the-shelf UAS. Hybrid threats may also target aviation forces on the ground with improvised explosive devices, direct fire, or indirect fire.

MULTIDOMAIN BATTLEFIELD

1-90. Army forces conduct operations synchronized across multiple domains to converge the effects necessary to succeed during operations short of conflict, as well as during large-scale combat operations. Aviation operations are inherently multidomain in nature, and Army Aviation leaders require a thorough understanding of the OE to identify opportunities and risks related to their operations. Army Aviation's ability to project power throughout the physical domains (land, air, and maritime), as well as operate in space and cyberspace, are vital to joint operations.

1-91. Army Aviation must be able to fight under all conditions and in all physical environments (mountain, desert, jungle, maritime, or urban) as a member of the combined arms team. Understanding and exploiting the unique benefits presented by the physical environment, while mitigating risks and limitations, are essential throughout the operations process.

1-92. Regarding Army Aviation, expeditionary operations can be considered those operations that require rapid deployment of a task-organized force via land, air, and/or sea into austere and/or immature theaters with the requisite mobility, lethality, protection, sustainment, and C2 capability. This enables them to operate as part of the joint, interagency, intergovernmental, and/or multinational team to conduct multidomain operations against peer competitors in large-scale combat operations. Army Aviation forces must be prepared to operate as part of the joint force and overcome anti-access and area denial capabilities to open a window of relative advantage. Specific considerations for expeditionary aviation operations may include—

- Missions. Aviation units must be ready to conduct the full range of military operations up to and including large-scale combat operations against peer or near-peer threats.
- Duration. Units must be prepared to operate with limited external resupply and sustainment for days to weeks while conducting continuous operations.

- Unit of employment. The CAB's lowest echelon of employment is the company/troop, supported by a battalion or battalion task force headquarters. The Gray Eagle Company's and BCT's lowest echelon of UAS employment is a platoon.
- Operations timeline. Units must be prepared to conduct operations in support of the joint force within 24 to 72 hours of arrival. This time may be adjusted (more or less) based on mission variables.
- Unit dispersion. Units must be prepared to disperse and relocate frequently throughout the conduct of operations for survivability and to remain engaged in the fight. Movement frequency is dictated by mission variables.
- Split operations. Units must be prepared to conduct split operations depending on mission variables and unit of employment.

LAND DOMAIN

1-93. While Army Aviation is equipped to fight multidomain operations, the aviation force primarily operates below the division's coordinating altitude of the air domain for the ground force. The land domain consists of multiple environments that aviation units are capable of operating in with proper integration. Army Aviation forces should be synchronized early in mission preparation to ensure austere environments have limited impact on the ability to achieve convergence.

MOUNTAIN ENVIRONMENT

1-94. Army Aviation is ideally suited to conduct combat operations in mountainous terrain. Providing the combined arms team with increased mobility, speed, and range, Army Aviation can effectively overcome the limitations imposed on traditional ground mounted and dismounted maneuver in compartmentalized and complex terrain. Mountains provide visual and audio masking that may limit threat acquisition ranges enabling aviation maneuver forces to achieve greater tactical surprise and protection from long-range observation and engagements. The use of air assault and air movement operations enables the combined arms team to rapidly reposition forces and materials at decisive points to retain greater freedom of action over the enemy while achieving economy of force over large expanses of complex terrain with limited ground LOCs. The mobility and lethality of attack and reconnaissance helicopters and UAS provide ground maneuver forces with precise direct fire and persistent reconnaissance beyond ground inter-visibility lines and in broken terrain, reducing enemy freedom of action and the likelihood of enemy forces achieving tactical surprise. MEDEVAC capabilities in remote locations with limited or no-road infrastructure increase the combined arms team's survivability and freedom of action. Army Aviation's over-the-horizon communication capabilities and ability to rapidly reposition ground maneuver leaders enhance the combined arms team's ability to perform C2 over extended distances and beyond line of sight (LOS).

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DESERT ENVIRONMENT

1-96. Army Aviation provides the combined arms team with enhanced capabilities to operate in desert environments. Army Aviation's speed, range, lethality, and versatility enable the combined arms team to gain, maintain, and exploit relative advantage in the desert environment.

1-97. The extended sensor, communications, and weapons ranges of attack and reconnaissance RW and UAS enable long-range engagement of targets and collection of combat information to confirm or deny the commander's PIR at the extended visual ranges typically associated with desert environments. Use of air assaults through the depth of the AO to seize typically limited key terrain or road networks can enable the combined arms team to counter the advantage of increased enemy ground maneuver speeds due to open and

trafficable terrain afforded in a desert environment. Use of air movements to reposition supplies, ammunition and fuel over typically extended LOCs enables greater tempo and agility, while reducing operational risk to ground logistics and maneuver units. Use of aviation reconnaissance and security operations forward or to the flanks of ground maneuver forces to identify obstacles, enemy forces, and the most suitable routes or axis of advance enables the combined arms team to maintain the tempo of operations while protecting friendly units through economy of force.

JUNGLE ENVIRONMENT

1-98. Much like in mountainous terrain, Army Aviation provides the combined arms team with a significant mobility and firepower advantage over enemy ground maneuver forces in restricted terrain that is characterized by dense vegetation, complex hydrography, and jungle canopy. Particularly, the employment of special patrol or fast-rope insertion and extraction system, hoist, aerial-delivered resupply, and paradrop capabilities enables Army Aviation to conduct infiltration and extraction of small teams, casualties, and emergency supplies in remote locations without the benefit of LZs or PZs.

1-99. Using air assault and air movement operations, the combined arms team can rapidly reposition forces to interdict limited enemy ground routes or seize objectives with less risk due to reduced threat visual and audio acquisition and direct fire engagement windows. Attack and reconnaissance helicopters and UAS provide the combined arms team with mobile and responsive reconnaissance and fires to support typically small, decentralized ground operations in remote locations that may be out of range of friendly artillery or against enemy targets that may be more difficult to locate or attack with FW close air support (CAS). MEDEVAC and air movement of supplies and personnel enable greater flexibility for distributed ground operations in remote locations, increasing the combined arms team's freedom of action and ability to maintain pressure on enemy forces and/or sustained engagement with local populations over larger AOs.

URBAN ENVIRONMENT

1-100. Urban areas are primarily the epicenters of human activity and generate much of the friction in future conflict. Urban operations range from operations in and around small built-up areas, towns, and small cities, to dense urban terrain. Army Aviation can effectively overcome many of the limitations imposed on traditional ground mounted and dismounted maneuver in this complex environment; however, certain threats are easier to conceal. Army Aviation's inherent speed, mobility, precision fires, and persistent reconnaissance capabilities provide the combined arms team with several options to reduce the complexity of operations in an urban environment.

1-101. The use of Army Aviation to air assault small ground maneuver elements to secure infrastructure, isolate urban areas, seize limited objectives, kill or capture high value targets, seize key terrain, or to conduct cordon and search operations reduces the enemy's freedom of action while economizing force and reducing risk to ground movements. The use of persistent reconnaissance and precision fires by attack and reconnaissance RW aircraft and UAS along key LOCs, named areas of interest, key infrastructure, or in support of small unit mounted and dismounted ground maneuver increases the combined arms team freedom of action, protects the force, and reduces the enemy's ability to attain tactical overmatch at the point of contact. Use of air ambulances equipped with rescue hoists to extract casualties from secured, compartmented, and congested areas enables the rapid evacuation of casualties, increasing the ground maneuver force tactical reach while reducing the requirement to secure ground movement. Using extended-range and non-LOS communications, Army Aviation can provide enhanced C2 capabilities to the combined arms team using UAS communications relay packages or airborne C2 aircraft to overcome the limitations of ground maneuver LOS communications in urban terrain.

Pandemic Zones

1-102. A pandemic zone is a geographical area infected with a pandemic disease. Within the pandemic environment, Army Aviation can conduct reconnaissance; convoy security; air movement of medical supplies and construction materials; air movement of medical; survey or security teams; aeromedical evacuation operations; and C2 support. Key considerations when operating in a pandemic zone are the difficulties associated with decontamination or sterilization of aircraft and ground support equipment and the limitations imposed on aircrews flying in personal protective equipment. Some of these limitations can be mitigated by employing UAS.

Post-Disaster Zones

1-103. A post-disaster zone is an area that has been struck with a natural, technological, or sociological disaster. Post disaster zones may be encountered as part of stability or humanitarian/disaster relief operations (overseas) or Defense Support of Civil Authority (DSCA) missions in the United States (continental United States, Alaska, Hawaii, and some territories). See ADP 3-28 for DSCA considerations. As in a pandemic zone, Army Aviation can provide a wide range of capabilities to overcome the lack of available road networks and other infrastructure impacted in the disaster zone. Key considerations include challenges to radio communications with local authorities, limited availability of host-nation fuel support, damage to airfields and other supporting infrastructure, limited LZ/PZs due to debris, and deconfliction with other civil or non-governmental aviation operations in the disaster zone.

CBRN Environments

1-104. Some challenges to aviation operations in CBRN environments are due to the lack of aircraft pressurization and difficulty of conducting aircraft decontamination when exposed to radiological or persistent forms of chemicals or biological agents. Aircrew and support personnel performance is significantly degraded when operating in full protective posture. Some of these challenges can be mitigated by employing UAS. Key considerations before conducting aviation operations in a CBRN environment include the following:

- Impact to future mission support due to long duration of decontamination operations for aircraft and support equipment.
- Performance impacts (especially in hot environments) on crews and support personnel.
- Difficulties using night vision devices while wearing CBRN protective equipment.
- Necessity of segregating contaminated aircraft, and the difficulty of maintaining this equipment.
- Importance to spot decontaminating aircraft and equipment to reduce the transfer of contamination.
- Thorough and clearance decontamination require the technical support of CBRN forces.

1-105. To reduce the likelihood of being targeted by CBRN weapons, commanders should consider tactics that minimize detection of large, fixed sites through camouflage or dispersion, retain mobility and the ability to rapidly reorganize, and anticipate attacks and adjust mission oriented protective posture accordingly. FM 3-11 provides more information on CBRN operations.

MARITIME DOMAIN

1-106. Army Aviation primarily operates from the land domain but can also be employed in the maritime domain with the joint force. Consideration should be given to aviation units who do not usually operate over large bodies of water. The necessary training such as overwater qualifications, deck landing certifications, and other of water tasks requires training to ensure mission success and survivability.

MARITIME OPERATIONS

1-107. Army Aviation provides the combined arms team and joint force with enhanced capabilities to operate in and from the maritime domain. Army Aviation operates in the maritime domain by using sea basing as a method of projecting force into the land domain or by using sea basing or land basing to project combat power in DS of joint forces in the maritime domain. As a force projection platform, sea basing enables Army Aviation to conduct operations from over the horizon into the land domain in support of the combined arms team or over water in support of joint naval forces. Using sea basing to conduct air assaults, air movement, attacks, or MEDEVAC from beyond the horizon into the land domain allows the combined arms team to overcome anti-access measures prior to seizing and establishing a lodgment. Based on the depth of anti-access measures, sea basing provides Army Aviation the ability to expand options for entry into an AO due to the mobility of the basing platforms and the inherent speed and range of Army Aviation. When appropriate, continued sea basing after seizing the lodgment can also serve as an economy of force by reducing the aviation land footprint, sustainment, and force protection requirements. In support of joint or multinational naval forces, using Army Aviation to conduct reconnaissance and attack operations over water enables the joint or multinational force commander to defeat small boat and small surface combatant threats, counter piracy and drug threats, protect individual ships or sea convoys, or attack area denial capabilities in the littorals. This enables the joint or multinational force commander to maintain open sea LOCs, protect

maritime infrastructure (oil rigs, offshore terminals, and harbors) and shipping, or deny enemy freedom of action in maritime choke points (straits, sea lanes, and littorals).

1-108. Army Aviation can provide support to the Joint and combined arms team operating from sea-based platforms and amphibious watercraft but also from land to near-shore areas that may consist of brown or blue water (such as support to sustainment; recon/interdiction of threat ships).

MARITIME LIMITATIONS

1-109. Rapidly changing weather conditions, sea state, low visibility, low contrast, and extended observation ranges over water present challenges to Army Aviation in the maritime environment. In some maritime areas, high temperatures may cause commanders to make load decisions between fuel, cargo, passengers, and munitions. Availability of suitable amphibious sea-basing platforms is likely to be a considerable limitation. In addition, flight over open water presents survivability issues due to increased observation/exposure and reduced opportunities for masking. Extended operations in a saltwater environment result in increased corrosion of critical parts and will cause increased maintenance requirements. En route, during low light and low contrast conditions, height above the water is more difficult to judge and may require higher flight altitudes to reduce the likelihood of controlled flight into the water. Additionally, the size and number of the sea-basing platforms directly impacts the overall size of the aviation force and the number of aircraft that can operate simultaneously. This can impact the combined arms team's ability to mass and maintain adequate aviation tempo in support of operations over land. If area denial measures are robust, stand-off of sea-basing capabilities will require longer routes, reduced station time on the objective unless additional FARPs/AFARs are employed on land in the AO. Sea basing also does not currently enable Army Aviation to employ organic FW UAS due to launch and recovery limitations. Operating from ships and other maritime platforms requires specialized deck landing and helicopter egress qualification and proficiency training as well as overwater flight proficiency, especially during night operations. The storage of munitions on ships also requires specialized munitions, procedures, training, and safety.

CYBERSPACE DOMAIN

1-110. The cyber domain consists of interdependent networks of information technology systems and infrastructures which friendly, adversary, and other entities use to transfer information. Computer networks, cellular phone systems, social media, and other technical infrastructures are all part of cyberspace. Army Aviation operates many C2 systems through cyberspace. Commanders must protect access to critical capabilities or information. Commanders should also be aware that any public presence on social media or other cyberspace platform may be used to help or hinder operations; this presence should be managed accordingly.

SPACE DOMAIN

1-111. The *space domain* is the area above the altitude where atmospheric effects on airborne objects become negligible (FM 3-0). While Army Aviation forces carry out their tactical operations in physical domains, they are critically enabled by space-based positioning, navigation, and timing capabilities. In addition, many UAS control systems and other voice or digital communications capabilities utilize satellite or other non-LOS capabilities in the space domain. Peer competitors have developed capabilities which may deny, degrade, or disrupt guaranteed access to information via the space domain. As such, commanders must plan to operate in a degraded or disrupted space operating environment. For instance, aircrews must be competent when navigating without precise GPS assistance; staffs must understand how to communicate using minimum time and bandwidth; and commanders at all levels must embrace a mission command philosophy which prizes decentralized execution and disciplined initiative.

DIMENSIONS

1-112. Army Aviation employment in the physical dimension requires interaction with the information and human dimensions. The result of proper employment of aviation units is a greater understanding of the information dimension in the battlespace which allows commanders greater impact on the enemy's human dimension. For more information regarding the physical, information, and human dimensions, refer to FM 3-0.

PHYSICAL DIMENSION

1-113. The *physical dimension* is the material characteristics and capabilities, both natural and manufactured, within an operational environment (FM 3-0). Aviation forces enable the maneuver commander greater flexibility, range, and depth in the physical dimension through speed and maneuverability. This is accomplished by operating from land, air, and maritime domains. Army Aviation capabilities can create friendly physical advantages that reduce an enemy force's capability to fight in multiple dimensions.

1-114. The electromagnetic spectrum (EMS) is a maneuver space consisting of all frequencies of EM radiation (oscillating electric and magnetic fields characterized by frequency and wavelength). The EMS is often organized by frequency bands, based on certain physical characteristics. The EMS includes radio waves, microwaves, IR radiation, visible light, ultraviolet radiation, x-rays, and gamma rays. Peer competitors seek to disrupt friendly access to information through interfering with or blocking certain transmissions. They may also target Army Aviation units based on their unique electromagnetic transmissions. Consequently, commanders must be aware of the various types of energy radiating from their C2 systems, aircraft, and sustainment nodes. Commanders must ensure their units take efforts to mitigate or lessen electromagnetic signatures whenever possible.

INFORMATION DIMENSION

1-115. The *information dimension* is the content, data, and processes that individuals, groups, and information systems use to communicate (FM 3-0). Information enables decision making, leadership, and combat power; it is also key to seizing and retaining the initiative and consolidating gains in an OE. The information environment is global and permeates every OE; it is highly congested and contested. Whenever Army Aviation supports operations in the information environment, the information operations officer and working group provide critical synchronization and execution. Commanders conduct information operations to create effects in the information environment to seize and retain advantage therein. Army Aviation can be employed to help create these effects. For example, Army Aviation can—

- Attack physical C2 nodes or communications infrastructure.
- Support military information support operations in the delivery of leaflets.
- Support Public Affairs operations through the review and release of digital imagery captured from manned and unmanned aviation platforms.
- Conduct a show of force to influence adversary decision making.

HUMAN DIMENSION

1-116. The *human dimension* encompasses people and the interaction between individuals and groups, how they understand information and events, make decisions, generate will, and act within an operational environment (FM 3-0). Army Aviation units focus and train the aviation core competencies providing a robust human dimension for operations with the joint force. The affinity for ground forces' mission success enables a culture of flexibility and determination from the Army Aviation community. Early integration into operational planning secures maximum exploitation of human dimension from the aviation enterprise.

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Chapter 2

Organizations and Command and Control

SECTION I – ARMY AVIATION FORMATIONS

2-1. Army Aviation formations are organized, trained, and equipped to support the combined arms team at the tactical and operational levels. Figure 2-1 displays operational and strategic frameworks used to visualize application of combat power and resources during operations. The operational reach of Army Aviation allows commanders to employ these capabilities across strategic and operational areas. The Army Aviation modified table of organization and equipment force structure consists of four types of brigade-level aviation maneuver organizations and two types of enabling group-level organizations. Brigade-level aviation maneuver organizations include a(n)—

- Combat aviation brigade (CAB).
- Expeditionary combat aviation brigade (ECAB).
- Theater aviation brigade (TAB).

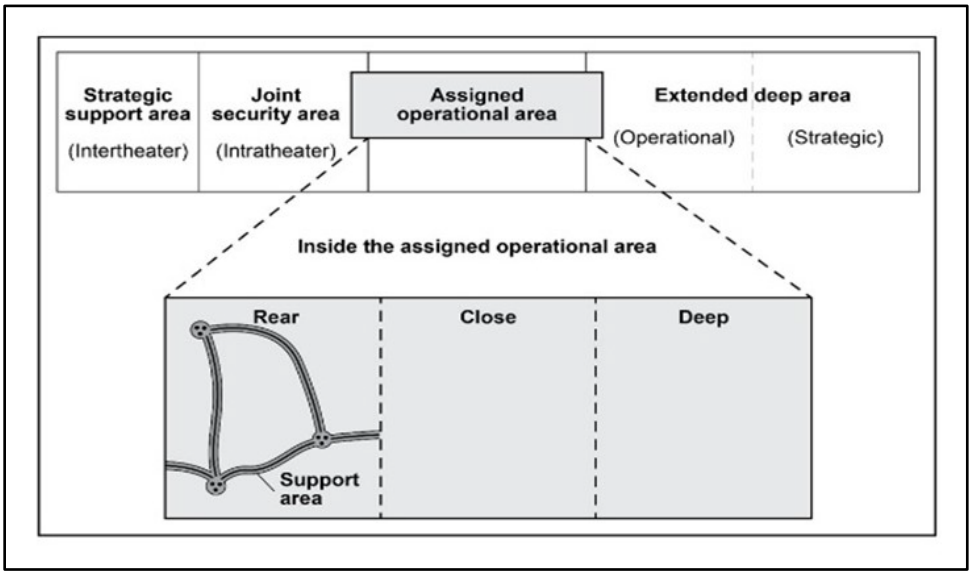


Figure 2–1. Operational framework in the strategic framework context

2-2. Enabling group-level aviation organizations provide necessary support and sustainment operations to ensure aviation maneuver brigades can complete their missions. These organizations include the—

- Theater airfield operations group (TAOG).
- Theater aviation sustainment maintenance group (TASMG).

2-3. The battalion- and squadron-level organizations of Army Aviation consist of a(n)—

- Air cavalry squadron (ACS).
- Attack battalion (AB).
- Assault helicopter battalion (AHB).
- General support aviation battalion (GSAB).
- Aviation support battalion (ASB).
- Security and support battalion (SSB).
- Airfield operations battalion (AOB).

2-4. Although the above organizations are multi-functional, given the complexity of the OE and mission variable requirements, aviation brigades and battalions are usually further task-organized to meet the requirements of an assigned mission. Task organization is routinely multi-component and can include any

combination of platoons, companies, and battalions organized under the aviation brigade, aviation squadron task force (ASTF), or aviation battalion task force (ABTF) headquarters. Aviation brigades and squadrons/battalions can also be task-organized with ground maneuver, joint aviation, and other non-aviation joint and Army units.

2-5. Brigade combat teams each have an organic tactical UAS platoon. The tactical UAS platoon, within the military intelligence company, provides the BCT commander with an organic aerial reconnaissance and security. The tactical UAS platoon comprises of a mission planning and control section and a launch and recovery section. Imagery collection from the UAS platoon assists commanders and planners primarily by providing situational awareness of the terrain, both natural and manmade, This supports the creation of products by the geospatial intelligence cell to support the staff's conduct of intelligence preparation of the operational environment (IPOE), using imagery as a confirming source of intelligence for another intelligence discipline, such as signals or human intelligence, and supporting the targeting effort, including information for combat assessment through the detection and tracking of targets before and after an attack.

SECTION II – AVIATION BRIGADES

2-6. This section provides details of the organization and capabilities of aviation brigades. The three brigade-sized formations in Army Aviation are—

- CAB.
- ECAB.
- Theater aviation brigade (TAB).

COMBAT AVIATION BRIGADE

2-7. The seven core competencies of the CAB are —

- Provide accurate and timely information collection (**See**).
- Provide early warning, reaction time, and maneuver space (**See**).
- Destroy, dislocate, disintegrate, or isolate enemy forces (**Strike**).
- Air assault (**Move**).
- Air movement (**Move**).
- Aerial evacuation (**Move**).
- Enable command and control (**Extend**).

2-8. The CAB is organized to synchronize operations of multiple aviation squadrons/battalions or ASTF/ABTF, ground maneuver battalions, or companies and joint aviation units. The CAB is an active duty or Army National Guard (ARNG) organization.

ORGANIZATION

2-9. The CAB consists of a headquarters and headquarters company (HHC), ACS, AB, AHB, GSAB, a Gray Eagle company, and an ASB. Figure 2-2 provides standardized CAB organization.

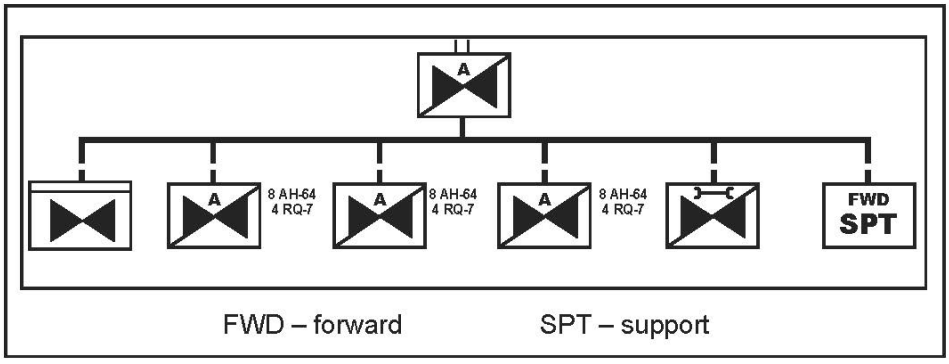


Figure 2–2. Combat aviation brigade

2-10. The CAB is designed to be modular, tailorable, and may be task-organized as required to support offensive, defensive, stability, or DSCA operations. The CAB is designed to operate as four aviation maneuver battalions or battalion/squadron task forces and one ASB, based on mission variables. The CAB receives up to two additional aviation battalions/squadrons or task forces without staff augmentation but requires additional maintenance personnel and equipment.

CAPABILITIES

2-11. The CAB performs the following mission tasks—

- Movement to contact.
- Attack.
- Reconnaissance.
- Security.
- Air assault.
- C2.
- Air movement.
- AE.
- Aerial CASEVAC.
- PR.
- Aerial-delivered mine operations.

2-12. The Gray Eagle company is organic to the CAB and is dependent on it for staff planning, integration, and coordination in joint and combined arms operations. As an element of the CAB, it provides accurate and timely information collection, provides reaction time and maneuver space, and destroys, delays, or disrupts enemy forces in support of the combined arms team. The Gray Eagle company is best employed to enable division and CAB information collection and targeting through reconnaissance, security, and attack in the deep area. The Gray Eagle company may task organize with other CABs or external elements in a combined arms effort. The Gray Eagle company conducts the following tasks:

- Zone, route, and area reconnaissance.
- Attack.
- Screen
- Battle damage assessment.
- C2 support.

2-13. A CAB may be required to support corps or theater-level headquarters in immature theaters until the arrival of the theater aviation brigade (TAB) and other assets or to fill gaps in TAB capabilities. TABs are comprised of ARNG and Reserve units that may require a period of mobilization. In the interim, a CAB may be tasked to fulfill the role of higher echelon support. Tasked mission sets may vary but likely include shaping, theater establishment, and sustainment operations. Tasks include, but are not limited to, the following:

- Air movement of personnel and equipment from the port of entry to support and rear areas.
- Movement of sustainment supplies and repair parts to ensure continuous operations and building of combat power.
- Battlefield circulation for key leaders, aerial evacuation, air assaults, security, reconnaissance, and offensive operations for shaping.

2-14. Some higher echelon tasks may be in direct support of the theater or corps, while others may shape lower echelon operations. These CAB missions may continue until the TAB or other assets arrive in theater to complete handover and provide support. The CAB may also be expected to conduct simultaneous mission planning and balance of battle rhythm events with its parent headquarters while providing higher echelon support or fulfilling the role as a theater aviation brigade. Commander to commander dialogue is vital to ensure assets are not spread too thin nor reach early culmination while supporting the division and higher echelons simultaneously.

EXPEDITIONARY COMBAT AVIATION BRIGADE

2-15. The core competencies of the ECAB are to air assault maneuver forces; position personnel, supplies, and equipment; evacuate casualties and conduct aviation support for PR; and enable C2 in support of the combined arms team. When task-organized with an AB/ACS, ECABs also provide accurate and timely information collection, provide reaction time and maneuver space, and destroy, defeat, disrupt, or delay enemy forces. The ECAB is an ARNG or United States Army Reserve (USAR) organization.

ORGANIZATION

2-16. The ECAB consists of an HHC, two AHBs, a GSAB, and an ASB. Figure 2-3 provides ECAB organization.

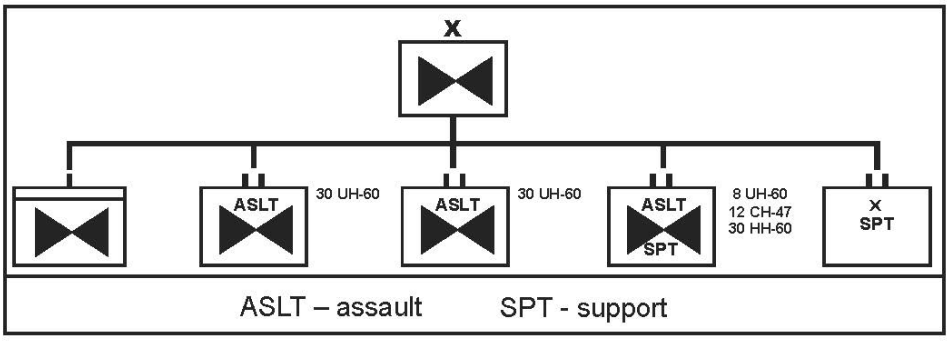


Figure 2–3. Expeditionary combat aviation brigade

CAPABILITIES

2-17. The ECAB is designed to be modular and tailorable. The ECAB is typically task-organized as required to support offensive, defensive, and stability operations in support of ground maneuver forces or during DSCA. The ECAB is designed to split into three maneuver battalions or battalion task forces, and one ASB, based on mission variables. The ECAB receives up to two additional ASTFs/ABTFs without staff augmentation but requires additional maintenance personnel and equipment. The ECAB performs the following tasks:

- Air assault.
- C2.
- Air movement.
- Aeromedical evacuation (AE).
- Aerial CASEVAC.
- PR.
- Aerial-delivered mine operations.

2-18. When the ECAB is augmented with attack or reconnaissance units, its capabilities are increased. Appropriate training time, staff, maintenance, and logistics support are critical in the development of these capabilities prior to conducting operations. When augmented, the ECAB may perform the following additional tasks:

- Movement to contact.
- Attack.
- Reconnaissance.
- Security.

THEATER AVIATION BRIGADE

2-19. The 63rd Theater Aviation Brigade (TAB) provides accurate and timely reconnaissance; positions personnel, supplies, and equipment; evacuates casualties; conducts search and rescue; and enables C2 during DSCA operations. The 63rd TAB is an ARNG or USAR organization.

2-20. The 449th Theater Aviation Brigade augments other aviation brigades or operates autonomously at the theater level to air assault maneuver forces; position personnel, supplies, and equipment; evacuate casualties and conduct PR; and enable C2. The 449th TAB is an ARNG organization.

ORGANIZATION

2-21. The 63rd TAB includes an HHC, six SSBs, and a non-standard GSAB. The 449th TAB includes an HHC, four GSABs, and one ASB. Figure 2-4 and figure 2-5 provide organizational structure of the 63rd TAB and 449th TAB.

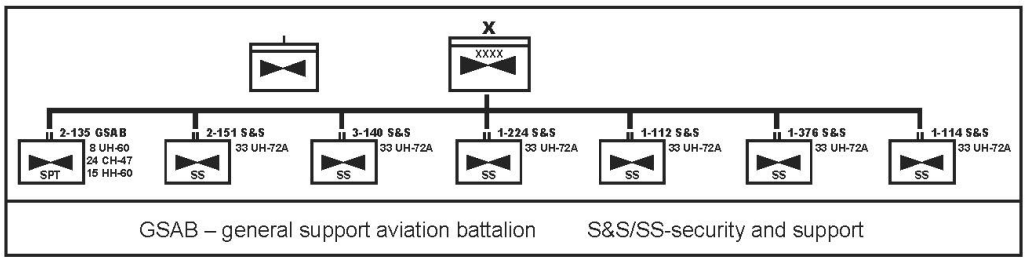


Figure 2–4. 63rd Theater aviation brigade

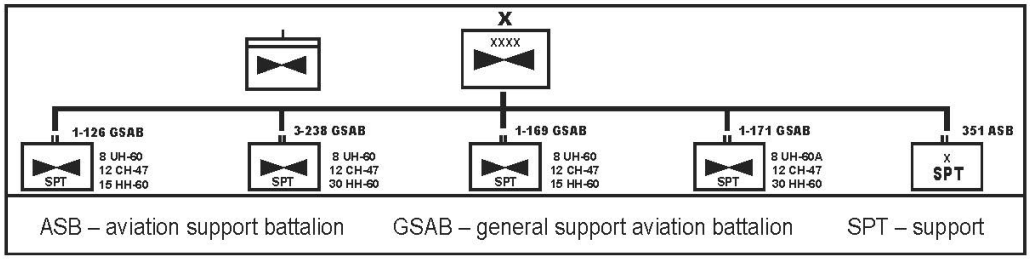


Figure 2–5. 449th Theater aviation brigade

2-22. Although the 63rd TAB headquarters with the GSAB and ASB has the capability of deploying in support of global operations, it is a Northern Command asset and typically operates in decentralized elements from the team to battalion level conducting DSCA.

CAPABILITIES

2-23. The 63rd TAB conducts the following tasks:

- Permissive zone, route, and area reconnaissance.
- Air movement.
- AE.
- Aerial CASEVAC.
- Search and rescue.
- C2.

2-24. The 449th TAB is a deployable operational-level organization that typically reinforces other aviation commands with subordinate battalions and companies or provides theater support autonomously. The 449th TAB may also be task-organized with other aviation units to accomplish other traditional CAB or ECAB missions and core competencies but requires C2, staff, and maintenance augmentation.

2-25. The 449th TAB conducts the following tasks:

- Air assault.
- Air movement.
- AE.
- Aerial CASEVAC.
- C2.
- PR.

2-26. When the 449th TAB is augmented with attack or reconnaissance units, its capabilities are increased. Appropriate training time, staff, maintenance, and logistics support are critical in the development of these capabilities prior to conducting operations. When augmented, the 449th TAB may perform the following additional tasks:

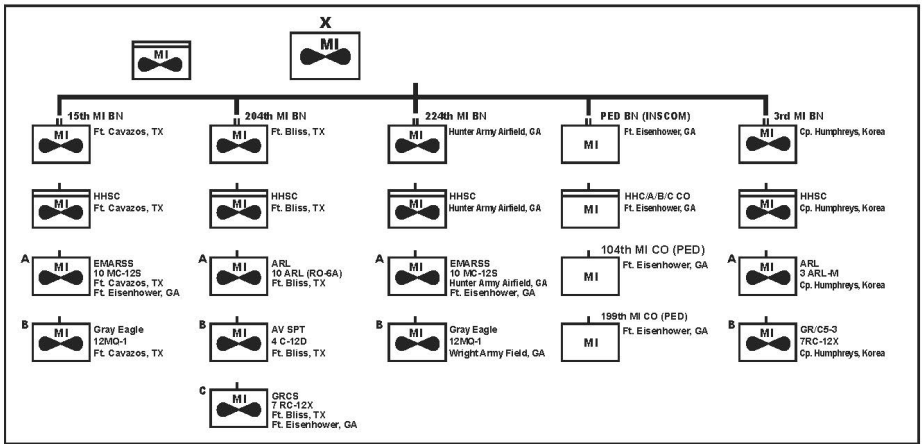
- Movement to contact.
- Attack.
- Reconnaissance.
- Security.

MILITARY INTELLIGENCE BRIGADE (AERIAL INTELLIGENCE)

2-27. The MI brigade's (aerial intelligence) missions are aerial signals intelligence (SIGINT) and geospatial intelligence (GEOINT). Imagery intelligence (IMINT) operations and intelligence support to effects are a subset of GEOINT. Communication intelligence (COMINT) and electronic intelligence are considered subsets of SIGINT. They provide reaction time and maneuver space, disrupt enemy forces, and enable mission command over extended ranges and complex terrain.

2-28. The 116th MIB (AI) is structured to provide flexibility to meet enduring and emerging requirements while achieving efficient economy of force operations in the operational environment. The brigade provides mission command of distributed processing, exploitation, and dissemination (PED) intelligence. Figure 2-6 provides the organizational structure of the 116th MIB (AI).

- Headquarters support company.
- Three MI aerial exploitation battalions (AEB).
- MI aerial reconnaissance battalion (ARB).
- MI processing, exploitation, and dissemination battalion (PED).
- MI company joint surveillance target attack radar systems (JSTARS).



ARL – airborne reconnaissance low
AV SPT – aviation support
BN – battalion
C – transport
CO – company
EMARSS – enhanced medium altitude reconnaissance and surveillance system
GRCS – guardrail common sensor
HHSC - Headquarters & Headquarters Service Company
INSCOM - U.S. Army Intelligence and Security Command
MC – multi-mission transport
MI – military intelligence
MQ – multi-mission unmanned aircraft
PED - processing, exploitation, and dissemination
RC – reconnassaince transport

Figure 2–6. 116th Military Intelligence Brigade

2-29. The 116 MIB (AI) conducts worldwide expeditionary intelligence, surveillance, reconnaissance, and target acquisition (ISR-TA) in support of Army unified land operations and joint requirements. The MIB (AI) provides the following—

- Integrated all source intelligence, analysis, production, and dissemination.
- Multidiscipline aerial intelligence operations
- Combat intelligence GEOINT, SIGINT and cyber capabilities—
  - Air and ground-based SIGINT collection.
  - IMINT for both aerial surveillance and reconnaissance.
- EW capabilities.

SECTION III – ENABLING AVIATION GROUPS

2-30. This section provides details of the organization and capabilities of enabling aviation groups. The two groups in Army Aviation are—

- TAOG.
- TASMG.

THEATER AIRFIELD OPERATIONS GROUP

2-31. The TAOG provides airfield and ATS support to the combined arms team. The TAOG, when deployed with AOBs, conducts airfield management operations, provides local airspace control for the airfield in a joint environment, and provides oversight, sustainment, and maintenance support to the theater ATS assets. The TAOG is an Active duty or ARNG organization.

ORGANIZATION

2-32. The TAOG consists of an HHC and up to three AOBs. Figure 2-7 provides the organizational structure of a TAOG.

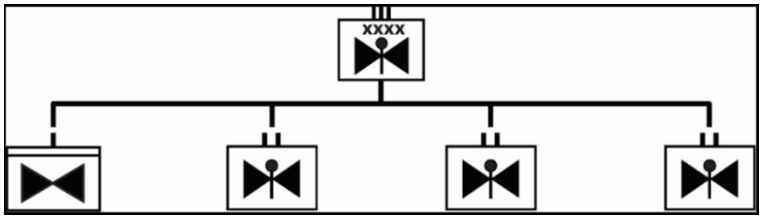


Figure 2–7. Theater airfield operations group

2-33. The TAOG and its subordinate ATS organizations are an enabling component of the modular, scalable, and tailored Army Aviation force and can support forcible and early entry contingency missions, as well as sustained theater aviation operations. Air traffic operations are conducted overseas within contiguous and noncontiguous areas, throughout the range of military operations. The ATS organizations support DSCA missions in response to natural or man-made disasters, accidents, and incidents within the United States and its territories.

CAPABILITIES

2-34. The TAOG, the AOB, and the sub-element ATS units are optimized for theater aviation support and deploy in total or are task-organized by teams based on operational requirements. The TAOG is organized and equipped to facilitate early deployment by establishing expeditionary airfields in support of Army, joint, and multinational operations. The TAOG supports reception, staging, onward-movement, and integration requirements for aviation assets arriving in the operations area, to include operation of heliports and helipads at seaports and aerial ports of debarkation.

2-35. The air traffic services standardization element is a unique organizational design of the TAOG. This element provides oversight, technical expertise, standardization to Army airfields at theater level and quality assurance for training and certification of controllers and ATS maintenance personnel. It develops airspace for restricted areas, transition areas and control zones. The air traffic services standardization element serves as the primary staff coordinator for ATS matters within the theater area. The element is capable of splitting

into two teams for modularity and support of five AOBs employed across a wide geographical area throughout the theater.

THEATER AVIATION SUSTAINMENT MAINTENANCE GROUP

2-36. The TASMG is resourced to provide aviation sustainment maintenance and limited depot sustainment support at the theater level. The TASMG also performs calibration and repair support for state specific TMDE requirements with technical reach back from the United States Army TMDE Activity. The TASMG is an ARNG organization.

ORGANIZATION

2-37. The TASMG consists of a headquarters and headquarters detachment, an aviation support company (ASC), and a group support company. Figure 2-8 provides TASMG organization.

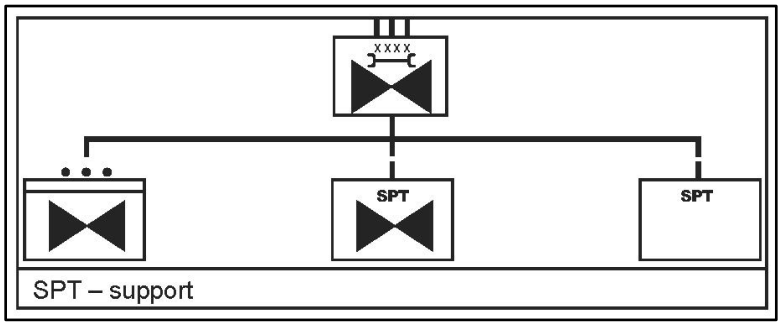


Figure 2–8. Theater aviation sustainment maintenance group

CAPABILITIES

2-38. When deployed, the TASMG is attached to the joint force sustainment headquarters or expeditionary support command and sets up at a secure location within an AO. It establishes and provides 24-hour, fixed-base aviation field and sustainment maintenance, logistics, and other essential aviation sustainment support to aviation units. The TASMG performs field maintenance, depot-level crash and battle damage repair, and sustainment/depot-level repair of major end items. It also performs sustainment-level maintenance for aircraft and aviation ground support equipment at fixed-land or sea-based locations. The TASMG assists deploying aviation operational units with port operations. Refer to ATP 3-04.7 for more information.

SECTION IV – AVIATION BATTALIONS AND SQUADRONS

2-39. This section provides details of the organization and capabilities of the aviation battalions and squadrons. The seven battalion-sized formations in Army Aviation are:

- ACS.
- AB.
- AHB.
- GSAB.
- ASB.
- SSB.
- AOB.

2-40. In addition to the above referenced battalions, Army FW aircraft can be found in MI battalions. The MI aerial exploitation battalion is organized with a headquarters and headquarters support company and two MI companies. The aerial reconnaissance battalion is organized with a headquarters and headquarters support company and two or three MI companies.

AIR CAVALRY SQUADRON

2-41. As an element of the CAB, the ACS provides accurate and timely information collection, provides reaction time and maneuver space, and destroys, defeats, delays, diverts, or disrupts enemy forces in support

of the combined arms team. Although the ACS is fully capable of conducting attacks, the integration of UAS at troop level makes the ACS the best formation for conducting reconnaissance, security, and movement to contact as primary missions, with attack operations as a secondary mission. The ACS employs its aircraft in formations as small as a single UAS up to as large as a squadron formation. The ACS is an Active duty organization.

ORGANIZATION

2-42. The ACS consists of a headquarters and headquarters troop, three air cavalry troops (ACTs) equipped with eight AH-64s and unmanned aircraft, an aviation maintenance troop (AMT), and a forward support troop. Figure 2-9 provides ACS organization.

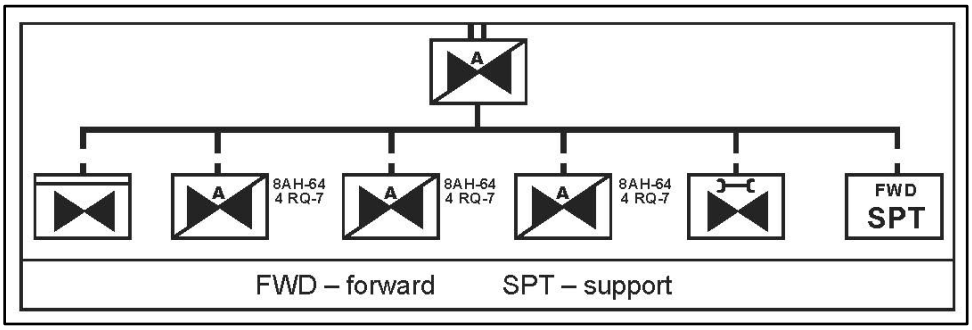


Figure 2–9. Air cavalry squadron

CAPABILITIES

2-43. The ACS conducts the following tasks:

- Zone, route, and area reconnaissance.
- Reconnaissance in force (when task-organized).
- Screen.
- Guard and area security (when task-organized).
- Movement to contact.
- Attack.

ATTACK BATTALION

2-44. As an element of the CAB, the AB provides accurate and timely information collection, provides reaction time and maneuver space, and destroys, defeats, delays, diverts, or disrupts enemy forces in support of the combined arms team. Although the AB is fully capable of conducting reconnaissance, security, and movement to contact operations, it has less overall reconnaissance capability than the ACS due to the lack of organic UAS at the company level, unless augmented by the CAB commander. The AB employs its aircraft in formations as small as attack weapons teams (AWTs) of two aircraft to as large as battalion formations. The AB is an active duty and ARNG organization. The AB provides administrative control of the Gray Eagle company.

ORGANIZATION

2-45. The AB consists of an HHC, three attack companies equipped with eight AH-64s each, an aviation maintenance company (AMC), and a forward support company (FSC) (figure 2-10, page 36).

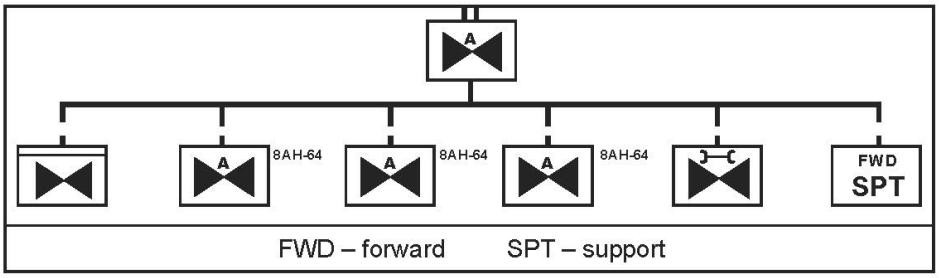


Figure 2–10. Attack battalion

CAPABILITIES

2-46. The AB conducts the following tasks:

- Attack.
- Zone, route, and area reconnaissance.
- Screen.
- Guard and area security (when task-organized).
- Movement to contact.
- Reconnaissance in force (when task-organized).

ASSAULT HELICOPTER BATTALION

2-47. As an element of the CAB and ECAB, the AHB air assaults maneuver forces; positions personnel, supplies, and equipment; conducts CASEVAC; conducts PR; and enables C2 in support of the combined arms team. The AHB is an active duty, ARNG, and USAR organization.

ORGANIZATION

2-48. The AHB consists of an HHC, three assault helicopter companies of 10 UH-60s each, an AMC, and an FSC. Figure 2-11 provides AHB organization.

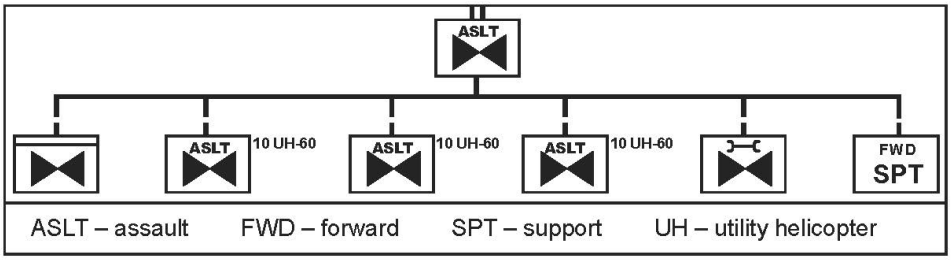


Figure 2–11. Assault helicopter battalion

CAPABILITIES

2-49. The AHB conducts the following tasks:

- Air assault.
- Air movement.
- Aerial CASEVAC.
- Aerial C2.
- PR.
- Area and local security.
- Aerial-delivered mine operations.

GENERAL SUPPORT AVIATION BATTALION

2-50. As an element of the CAB, ECAB, and TAB, the GSAB air assaults maneuver forces; positions personnel, supplies, and equipment; evacuates casualties; conducts PR; and enables C2 in support of the combined arms team. The GSAB is an Active duty, ARNG, and USAR organization.

ORGANIZATION

2-51. The GSAB in the CAB and TAB-A consists of an HHC, a command aviation company (CAC) of 8 UH-60s, a heavy lift company with 12 CH-47s, an air ambulance company of 15 HH-60s, an AMC, an FSC, and an ATS company. Figure 2-12 provides CAB and TAB-A GSAB organization.

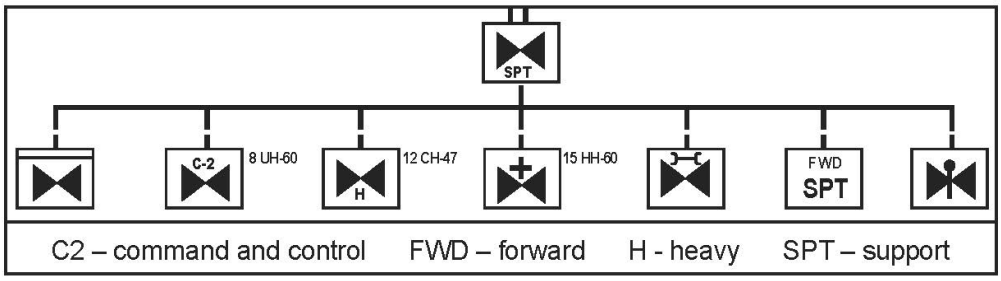


Figure 2–12. General support aviation battalion (CAB)

2-52. The GSAB in the ECAB consists of an HHC, a CAC of 8 UH-60s, a heavy lift company with 12 CH-47s, 2 air ambulance companies of 15 HH-60s each, an AMC, an FSC, and an ATS company. Figure 2-13 provides ECAB GSAB organization.

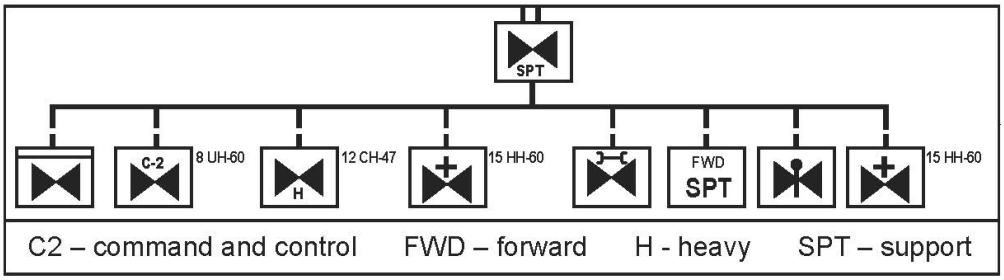


Figure 2–13. General support aviation battalion (ECAB)

2-53. The GSAB in the TAB-GS consists of an HHC, a CAC of 8 UH-60s, 2 HLCs with 12 CH-47s each, an air ambulance company of 15 HH-60s, an AMC, and an FSC. Figure 2-14 provides TAB-GS GSAB organization.

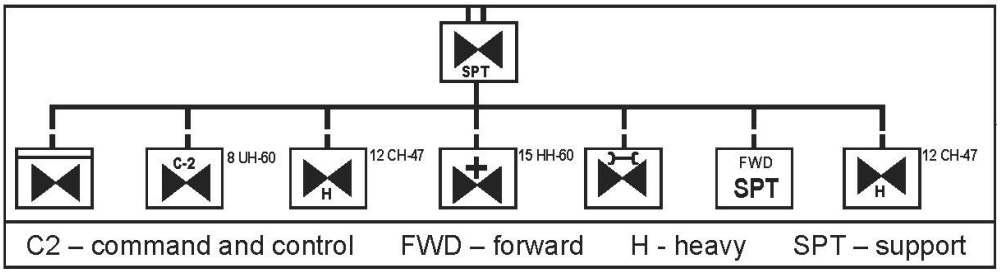


Figure 2–14. General support aviation battalion (TAB-GS)

CAPABILITIES

2-54. The GSAB conducts the following tasks:

- Air movement.
- AFAR support.
- Air assault.
- PR.
- Aerial C2.
- AE.
- Aerial CASEVAC.
- ATS.

AVIATION SUPPORT BATTALION

2-55. The ASB is an element of the CAB, ECAB, and TAB. It provides aviation and ground field maintenance, network communications, resupply, and medical support. The ASB provides maintenance augmentation to aviation battalions when required. The ASB is an Active duty, ARNG, and USAR organization.

ORGANIZATION

2-56. The ASB consists of an HHC, a distribution company, an ASC, and a network support company. Figure 2-15 provides ASB organization.

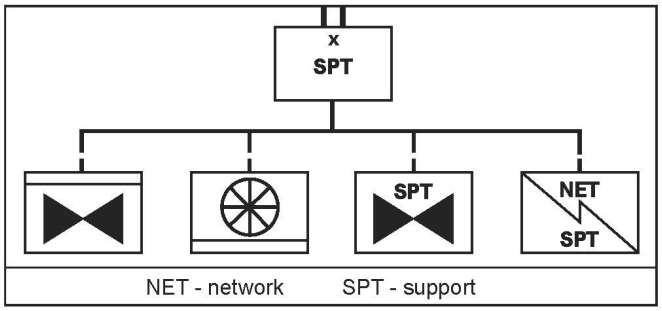


Figure 2–15. Aviation support battalion

CAPABILITIES

2-57. The ASB performs the following tasks:

- Provides ground vehicle and aviation maintenance and recovery operations.
- Provides signal and network support to the CAB for C2.
- Conducts sustainment as a warfighting function for the CAB when functioning as an organic CAB.
- Provides deployment support to the CAB during embarkation and debarkation.
- Provides distribution management operations within the aviation brigade.
- Acts as Role 1, Army HSS for the aviation brigade.

SECURITY AND SUPPORT BATTALION

2-58. The SSB is an element of the TAB-GS. It is a multi-purpose aviation unit that supports a variety of federal and state missions in permissive environments by providing accurate and timely reconnaissance information; positioning personnel, supplies, and equipment; evacuating casualties; search and rescue; and enabling C2 in DSCA operations. The SSB is an ARNG organization.

ORGANIZATION

2-59. The SSB consists of an HHC, three security and support companies of eight UH-72s, and an air ambulance company of eight UH-72s. Figure 2-16, page 39, provides SSB organization.

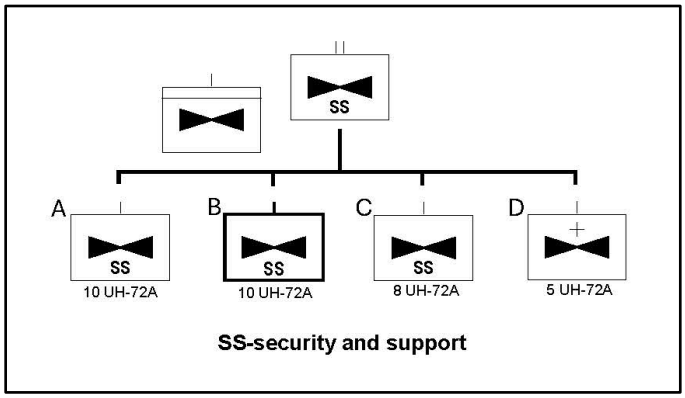


Figure 2–16. Security and support battalion

CAPABILITIES

2-60. The SSB provides a geographically dispersed, readily available, light-utility aviation capability for federal or state authorities and combatant commanders. It primarily supports homeland security/defense but can also deploy and operate world-wide in permissive environments. The SSB can operate as a separate battalion, an ABTF, or task-organizing into company or platoon elements to support assigned missions. The SSB conducts the following tasks in permissive environments only:

- Air movement.
- Reconnaissance and observation in support of counter-narcotic, drug interdiction, and law enforcement agencies.
- Aerial observation of terrain or man-made features.
- AE.
- Aerial CASEVAC.
- Civil search and rescue operations.

AIRFIELD OPERATIONS BATTALION

2-61. The AOB provides airfield management including airfield operations, flight dispatch services, and ATS. The AOB is an Active duty and ARNG organization.

ORGANIZATION

2-62. The AOB consists of a(n) headquarters element, airfield management element, and ATS company. Figure 2-17 provides organizational structure of an AOB.

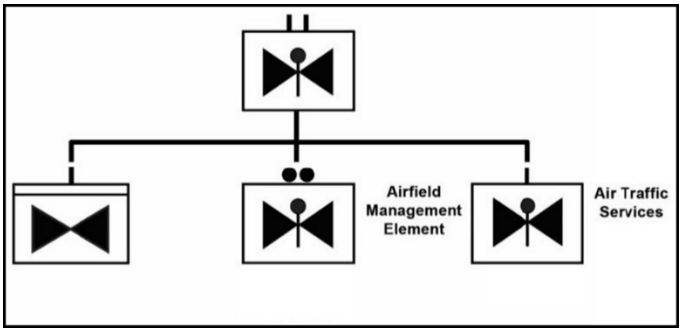


Figure 2–17. Airfield operations battalion

CAPABILITIES

2-63. The AOB can deploy to expeditionary or mature theaters to conduct airfield management and ATS. The AOB may relieve CAB ATS companies in place to allow CABs to reposition forward during offensive

operations or during sustained operations when additional airfields are required in the theater. The AOB conducts ATS and airfield management.

THEATER FIXED-WING BATTALION

2-64. The theater aviation FW battalion provides long-range air movement for inter-theater, intra-theater, and garrison operations. They provide reaction time and maneuver space; air movement of personnel, cargo, equipment, and supplies; evacuate wounded or recover isolated personnel and enable mission command over extended ranges and complex terrain.

ORGANIZATION

2-65. Aviation FW battalions may be comprised of Regular Army, ARNG, or United States Army Reserve units. The theater aviation FW battalion is organized with a HHC and three FW companies. Each company has eight assigned aircraft. All aircraft maintenance is performed by contractor logistics support. Contractors supply maintenance personnel and procure commercial aircraft parts (figure 2-18). Army FW aircraft are specially modified commercial off-the-shelf systems. Individual aircraft capabilities are located in chapter five. The two distinct mission fleets are—

- OSA. OSA-A was created to perform FW OSA operations for all Regular Army, ARNG, and USAR units during peacetime and wartime. OSA units are equipped with the following—
  - C-12.
  - C-26.
  - UC-35.
  - C-37 are senior support aircraft designated for the Service Secretary and Chief of Staff only. Operation and C2 of these aircraft are not covered in this publication.
- Special electronic mission aircraft (known as SEMA). Special electronic mission aircraft units provide aerial intelligence collection during peacetime and wartime. These units are equipped with the following—
  - EO-5C Airborne Reconnaissance Low.
  - RO-6A Airborne Reconnaissance Low-Enhanced.
  - RC-12 Guardrail Common Sensor.
  - MC-12 Enhanced Medium Altitude Reconnaissance and Surveillance System.

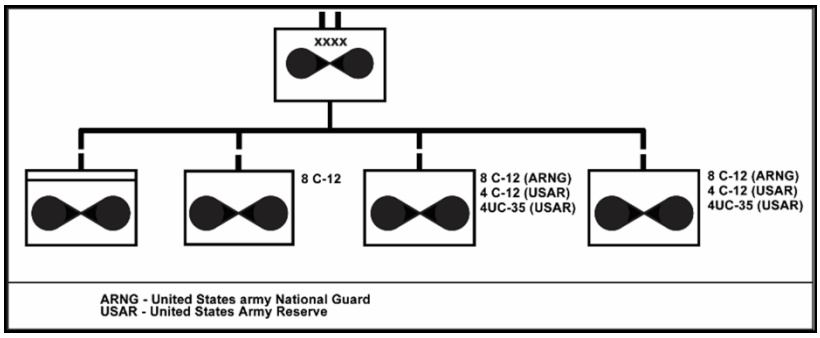


Figure 2–18. Theater fixed-wing battalion

THEATRE AVIATION COMPANY

2-66. Theater aviation companies provide commanders, at all levels, with a variety of FW support capabilities. Each company consists of a HQ section and two platoons (figure 2-19, page 41), each with four FW aircraft. The company is designed to operate as one entity; however, FW aircraft platoons/detachments may operate from different locations.

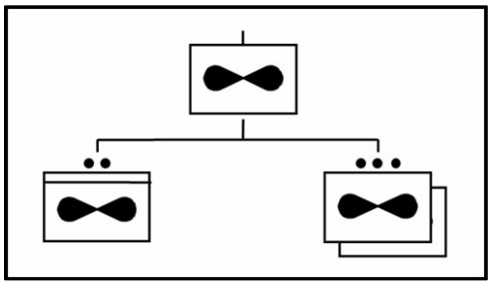


Figure 2–19. Theatre fixed-wing aviation company organization

MILITARY INTELLIGENCE BRIGADE (AERIAL INTELLIGENCE)

2-67. The 116 MIB (AI) is covered in paragraphs 2-27 through 2-29, page 32 and 33. The organization chart is shown in figure 2-6, page 32.

SECTION V – AVIATION SQUADRON/BATTALION TASK FORCES

2-68. Army Aviation may be employed organically or task organized as a mission tailored air assault task force (AATF), ASTF, or ABTF to conduct specific operations. See FM 3-99 for more information on AATFs. This task organization may be OPCON or attached to cover the length of an operation or deployment. The only difference between an ASTF and an ABTF is the ASTF is built on an organic ACS headquarters versus other aviation battalion headquarters. In general, Army Aviation is employed organically in large-scale combat operations and as an ABTF/ASTF during stability operations.

2-69. The configuration of the ASTF/ABTF varies widely and is driven by mission variables. In general, an ASTF/ABTF consists of an aviation squadron/battalion headquarters troop/company with its organic AMT/AMC (typically augmented) and forward support troop/company, and two to five organic and non-organic aviation maneuver companies and/or platoons. Based on the requirements of the mission, the aviation maneuver companies/troops and platoons are typically a tailored mix of attack, reconnaissance, assault, heavy lift, UAS, and MEDEVAC assets.

2-70. An ABTF that supports an infantry unit conducting frequent air assaults requires more assault and heavy lift aircraft than an ABTF with other mission requirements. An ASTF/ABTF that supports an armor unit tasked with a covering force mission typically requires more attack aircraft. During semi-permanent task organization, the mix of aviation maneuver troops/companies and platoons (and specific numbers and types of aircraft) is tailored to meet the predominant numbers and types of missions required for the supported unit. When task organized as an ASTF/ABTF to accomplish one mission, the ASTF/ABTF is specifically tailored for the mission.

2-71. Aviation brigade commanders need to consider and establish subordinate command and support relationships for the duration of the ABTF task organization. See table 2-1, page 42, and FM 3-0, Table B-2, for more information on command and support relationships. Regardless of whether the task organization is OPCON, attached, or some other relationship, maintenance, staff and possibly other personnel and equipment augmentation is required. This augmentation may come from another aviation maneuver squadron/battalion that detaches the troop/company or platoon to the ASTF/ABTF, or personnel augmented from units outside of the CAB.

SECTION VI – COMMAND AND SUPPORT RELATIONSHIPS

2-72. Commanders build combined arms organizations using command and support relationships. Command relationships define command responsibility and authority. Support relationships define the purpose, scope, and effect desired when one capability supports another. Properly established command and support relationships are critical to effective combined arms maneuver. During large-scale combat operations, commanders must evaluate appropriate command or support relationships for each subordinate echelon during each phase of an operation. These reviews properly enable combined arms maneuver through all

phases of the operation, and best equip subordinate units to accomplish the commander's intent. Operations orders placing units under command of a different headquarters for any length of time must include a detailed summary of the relationship between the unit, its new headquarters, and its parent unit. Typically, the smallest element Army Aviation detaches is a company-sized element except for air ambulance units and UAS, which can conduct operations at the platoon level with coordination.

COMMAND RELATIONSHIPS

2-73. Command relationships specify superior and subordinate headquarters responsibilities. The type of command relationship selected corresponds to the duration of the mission and it serves to clarify duties of gaining and losing headquarters. Table 2-1 provides more information on command relationships. Refer to FM 3-0 for additional information.

Table 2–1. Command relationships

If relationship is—	***Then inherent responsibilities—***							
	Have command relation-ship with—	***All organic forces organized with the HQ—***	***Organic HQ—***	***Are assigned position or—***	***Provide liaison to—***	***Establish and maintain comms with—***	***Have priorities establish-ed by—***	***Can impose on GU further command or support relation-ship of—***
Organic			Army HQ specified in organizing document	Organic HQ	N/A	N/A	Organic HQ	Attached; OPCON; TACON; GS; GSR; R; DS
Assigned	GU	Gain HQ	Gaining Army HQ	OPCON Chain of command	As required by OPCON	As required by OPCON	ASCC or service-assigned HQ	As required by OPCON HQ
Attached	GU	GU	Gaining Army HQ	GU	As required by GU	Unit to which attached	GU	Attached; OPCON; TACON; GS; GSR; R; DS
OPCON	GU	PU and GU; GU may pass OPCON to lower HQ1	Parent unit	GU	As required by GU	As required by GU and PU	GU	OPCON; TACON; GS; GSR; R; DS
TACON	GU	PU	PU	GU	As required by GU	As required by GU and PU	GU	TACON; GS GSR; R; DS

Legend:
ADCON-administrative control
comms-communications
DS-direct support
GS-general support
GSR-general support–reinforcing
GU-gaining unit
HQ-headquarters
N/A-not applicable
NATO-North Atlantic Treaty Organization
OPCON-operational control
PU-parent unit
R-reinforcing
TACON-tactical control

ORGANIC

2-74. Organic forces form an essential part of a military organization as part of its design. A CAB has five battalions, plus a headquarters company organic to it. If, for example, the AB is task-organized under a BCT headquarters for a temporary mission, it would return to the control of the CAB upon completion.

ASSIGNED

2-75. Subordinates are assigned place units or personnel in an organization where such placement is relatively permanent, and/or where such organization controls or administers the unit or personnel for the primary functions of the unit. Due to sustainment, standardization, and safety requirements, aviation battalions or ASTFs/ABTFs typically remain assigned to their parent CAB. This relationship includes administrative control unless specifically stated otherwise.

ATTACHED

2-76. Subordinates are attached when the placement of units or personnel in an organization is relatively temporary. The commander of the unit that receives the attachment is responsible for the sustainment and logistical support that is beyond the capability of the attached unit. An example of this relationship is an aviation maneuver company attached to a sister aviation battalion to form an ASTF/ABTF. The gaining headquarters normally assumes administrative control requirements, particularly sustainment unless stated otherwise.

OPERATIONAL CONTROL

2-77. *Operational control* (OPCON) is a command relationship that gives a commander authority over subordinate forces to organize and employ those forces, designate objectives, assign tasks, and give direction regarding accomplishment of the mission (JP 1). The commander exercising OPCON authority has no responsibility for logistical sustainment of the supporting unit. A CAB may place an ABTF or company-sized unit OPCON to a ground force for a specific mission requirement, usually of limited and short duration where no enduring sustainment is required.

TACTICAL CONTROL

2-78. *Tactical control* (TACON) is a command relationship that gives a commander authority over assigned or attached forces or commands, or military capability or forces made available for tasking, which is limited to and is usually local direction and control of movements or maneuvers necessary to accomplish assigned missions (JP 1). Notably, only the parent unit may further task-organize a unit that has been assigned TACON to another headquarters. The CAB frequently employs TACON during stability operations for short duration operations requiring a high degree of tactical integration, such as area security or air assaults.

SUPPORT RELATIONSHIPS

2-79. Support relationships are DS and GS. The aviation brigade or an ABTF may employ utility and heavy lift assets in a GS role to conduct aerial sustainment by the movement of personnel and equipment, or air ambulance assets when area coverage of multiple units and AOs is required. An ABTF is traditionally employed as DS to a brigade or higher headquarters. Table 2-2, page 44, depicts support relationships.

Table 2–2. Support relationships

If relationship is—	Then inherent responsibilities—							
	Have command relationship with—	*May be task-organized by—*	*Receive sustainment from—*	*Are assigned position or an AO by—*	*Provide liaison to—*	*Establish and maintain comms with—*	*Have priorities established by—*	*Can impose on gained unit, further support relationship of—*
DS	Parent unit	Parent unit	Parent unit	Supported unit	Supported unit	Parent unit; supported unit	Supported unit	See note
Reinforcing	Parent unit	Parent unit	Parent unit	Reinforced unit	Reinforced unit	Parent unit; reinforced unit	Reinforced unit; then parent unit	N/A
GS-reinforcing	Parent unit	Parent unit	Parent unit	Parent unit	Reinforced unit and as required by parent unit	Reinforced unit and as required by parent unit	Parent unit; then reinforced unit	N/A
GS	Parent unit	Parent unit	Parent unit	Parent unit	As required by parent unit	As required by parent unit	Parent unit	N/A

Note. Commanders of units in direct support may further assign support relationships between their subordinate units and elements of the supported unit after coordination with the supported commander.

AO-area of operations, DS-direct support, GS-general support, not applicable-N/A

DIRECT SUPPORT

2-80. *Direct support* (DS) is a support relationship requiring a force to support another specific force and authorizing it to answer directly to the supported force's request for assistance (JP 3-09.3). Army Aviation units may operate in a DS relationship allowing operations to be coordinated directly with the supported ground unit expediting synchronization and improving effectiveness of the relationship. DS is typically the relationship established when an ABTF is supporting a brigade or higher headquarters for an extended duration. This enables the CAB to effectively sustain the ABTF and maintain the appropriate levels of safety, standardization, and mission oversight.

GENERAL SUPPORT

2-81. *General support* (GS) is support that is given to the supported force as a whole and not to any particular subdivision thereof (JP 3-09.3). Army Aviation units may be placed in GS of several units. They receive GS missions from their parent headquarters based upon support priorities established by the higher commander. When Army Aviation units operate in a GS role, the ground maneuver unit must request support from the parent higher headquarters of the aviation force.

SECTION VII – COMMAND POST

2-82. Aviation units typically operate from a main command post and a tactical command post while conducting operations. Throughout planning, preparation, and execution, it is crucially important that commanders and staffs consider the survivability of each of these C2 nodes.

MAIN COMMAND POST

2-83. The *main command post* is a facility containing most of the staff designed to control current operations, conduct detailed analysis, and plan future operations (FM 6-0). It contains the necessary enablers to execute the operations process and to control current operations. Refer to FM 6-0 or ATP 6-0.5 for more on CPs and CP survivability. The main CP is the primary C2 structure for the brigade and battalion. Its primary missions are to control operations, maintain situational understanding, inform the commander's decisions, and prepare and publish orders and plans. It also provides detailed analysis, planning, and coordination for the tactical CP. The commander operates from the main CP when not operating from the tactical CP, command vehicle, or an aircraft; however, when the commander operates from a forward position, the unit executive officer or deputy commander leads operations in the main CP. The main CP's primary functions include the following:

- Communicate and inform subordinate, higher, and adjacent units.
- Inform and assist the commander and subordinate commanders.
- Prepare and issue fragmentary orders, operations orders, operational plans, intelligence summaries, intelligence reports, and situation reports.
- Operate on a 24-hour basis.
- Conduct future planning continuously.
- Maintain running estimates continuously.
- Maintain situational understanding and a common operational picture across the Army warfighting functions.
- Receive, evaluate, and process combat information from subordinate units and higher headquarters.
- Maintain the necessary products to further the commander's situational understanding.
- Process information into intelligence.
- Perform limited video exploitation or Phase 1 processing, exploitation, and dissemination for UAS and AH-64 sensor data.
- Conduct fire support planning.
- Conduct airspace planning and coordination.
- Coordinate terrain management.
- Coordinate and track sustainment requirements (logistics, air and ground maintenance capabilities, and status).
- Make recommendations to the commander.
- Plan and orchestrate briefings, debriefings, and rehearsals.
- Coordinate with division JAGIC or other air to ground coordination elements to plan and execute air operations in division-assigned airspace.
- Provide a CAB LNO to the JAGIC.
- If assigned or attached to a tactical corps command post, provide liaison and coordinate directly with the integration centers within the corps current operations cell.

TACTICAL COMMAND POST

2-84. The *tactical command post* is a facility containing a tailored portion of a unit headquarters designed to control portions of an operation for a limited time (FM 6-0). The tactical CP is established to enhance C2 of current operations. It can be deployed to higher or subordinate headquarters to facilitate parallel planning or when extended distances preclude operation from the CP. The tactical CP must communicate with higher headquarters, adjacent units, employed subordinate units, and the main CP. The tactical CP relies on the main CP for planning, detailed analysis, and coordination.

2-85. The tactical CP is fully mobile and small-sized to facilitate security and frequent hasty displacement. Its organizational layout, personnel, and equipment is mission variable dependent and should be detailed in the unit standard operating procedures (SOPs).

2-86. While the operations section is responsible for the tactical CP, the tactical CP is normally comprised of the command group, and personnel from the intelligence, operations, and fires staff cells. Augmentation may include the standardization officer, aviation mission survivability officer, aviation safety officer, aviation LNO, UAS operations officer, and the personnel staff officer and/or logistics staff officer (if the main CP is displacing).

COMMAND POST SURVIVABILITY

2-87. CP survivability is crucial to the success of any mission. During large-scale combat operations, commanders may direct frequent relocations of CPs to prevent detection, ensure survivability, and remain postured to support ground maneuver forces. Depending on threat and operational tempo, commanders must tailor their CPs to consider a balance between effectiveness and survivability. Dispersion, reduced size, redundant systems and processes, and enhanced mobility all provide potential increases to CP survivability.

2-88. Aviation CPs are faced with the challenge of requiring significant amounts of equipment and space to effectively conduct operations. Commanders and staffs must consider what equipment is mandatory to conduct effective operations, how each piece of equipment is moved, and what options may exist to minimize signature. Electronic detection of emissions, radar detection of aircraft, or visual detection by observers is the three most likely methods for enemy to detect and locate CPs. Examples of minimizing signature include—

- Dispersed or camouflaged elements are harder to detect.
- Park aircraft away from dusty areas minimizes their signature when taking off or landing.
- Enforce light discipline to make the CP harder to locate.
- Displace frequently to make the unit harder to track.

SECTION VIII – STAFF

2-89. Aviation battalions and brigades have many of the staff officers present in other organizations. See FM 6-0, Chapter 2, for descriptions. However, the coordinating staff within an aviation battalion or brigade are unique; these officers typically belong to an aviation specific military occupational specialty. Also, some aviation staff sections are not as robust as a brigade combat team, specifically the S-2 and fire support sections. Aviation brigades have United States Air Force staff officers for weather forecasting teams and airfield management officers. Special staff sections unique to the aviation brigade are delineated below. See Force Management Systems Web (also known as FMS Web) and current modified table of organization and equipment for specific unit personnel authorizations of special staff.

2-90. The airfield management element of the combat aviation brigade is organized to execute airfield management operations at airfields with joint partners. This element executes airfield management and safety responsibilities when the CAB is assigned senior airfield authority duties. These duties and support requirements may include the coordination of aerial port operations and material handling equipment, crash fire rescue, aircraft refueling, air traffic control, weather, and airfield lighting. JP 3-36 and JP 4-04 provide additional information on senior airfield authority responsibilities.

2-91. The Air Force staff officers manage the Air Force weather team which specializes in weather forecasting for Army Aviation missions. Reference Air Force Doctrine Publication 3-59 for additional information. The weather team is integrated with aviation units to provide critical information such as:

2-92. Real time weather reporting capabilities.

- Severe weather warnings.
- Tailored mission weather products.
- Historical weather assessments.
- Various weather briefings.

SAFETY OFFICER

2-93. The safety officer is the primary advisor to the commander and staff on all matters pertaining to aviation and ground safety. The aviation safety officer monitors and conducts hazard analysis of plans, training, operations, and unit functional areas to advise commanders on recommended corrective actions, policies, objectives, and priorities to improve performance.

STANDARDIZATION OFFICER

2-94. The standardization officer is the primary advisor to the commander for the aircrew training program. The standardization officer is unique to aviation units in that they monitor and aid the commander in the

development and implementation of aircrew training programs and standardized execution of unit mission essential tasks.

UNMANNED AIRCRAFT SYSTEM STANDARDIZATION OPERATOR

2-95. The UAS standardization operator is senior advisor to the brigade commander and command staff on all brigade UAS operations and personnel. This position requires a qualified instructor operator and selected by the unit commander. The standardization operator is qualified and current in at least one of the UAS assigned to the unit. The standardization operator provides technical supervision of the UAS program for the brigade along with assisting the brigade SP with supervision and maintenance of the aircrew training program.

2-96. The standardization operator provides oversight and updates for all assigned UAS at all levels to the brigade commander and command staff. They administer training and evaluation in specified standardization operator duties as described in the aircrew training module and TC 3-04.11. They are also responsible for providing guidance, mentorship, training, and evaluations to all assigned operators and instructor operators in the designated unmanned aircraft per approved aircrew training tasks. The standardization operator maintains the brigade's UAS standardization program and conducts inspections for assigned battalion, company, and troop UAS programs to include instructor operator continuation training. Additional information can be found in AR 95-1, UAS training modules, and associated TCs.

AVIATION MISSION SURVIVABILITY OFFICER

2-97. The aviation mission survivability officer is the primary advisor to the commander on the aviation mission survivability program. This program encompasses combat survivability and combat aviation mission analysis and planning. Combat survivability includes aircraft survivability equipment and countermeasures, characterizing threat capabilities and limitations affecting the vertical scheme of maneuver, and the combat tactics, techniques, and procedures of aviation forces.

AVIATION MASTER GUNNER

2-98. Assigned to the CAB tactical command post, the aviation master gunner is the primary advisor to the commander for aircraft gunnery training programs to include helicopter door gunnery and UAS gunnery. While deployed in theater, the master gunner manages helicopter gunnery training and sustainment and advises the commander and staff in the selection of weapons and employment techniques during the mission planning process. The aviation master gunner is assigned to the CAB as well as the AB/ACS.

BRIGADE AVIATION MAINTENANCE OFFICER

2-99. The brigade aviation maintenance officer is the commander's primary advisor on generating aviation combat power. Refer to chapter 4 for more information on the brigade aviation maintenance officer.

BRIGADE SURGEON SECTION

2-100. In addition to the duties of a brigade surgeon section in other units (see FM 6-0 for more information), aviation brigades have unique requirements. The brigade surgeon section consists of the aerospace medicine officer and medical operations officer. This section is responsible for developing the MEDEVAC plans to include the use of both air and ground assets. See below for additional requirements. For more information regarding this section, please reference ATP 4-02.2 and ATP 4-91.

AEROSPACE MEDICINE OFFICER

2-101. The aerospace medicine officer (flight surgeon) advises the commander on all aviation medicine matters to include flight status qualification, support to aircrews, medical aspects of aircrew training, and monitoring the fit and use of aviation life support equipment.

MEDICAL OPERATIONS OFFICER

2-102. The medical operations officer advises the commander and staff on MEDEVAC operations. The officer is responsible for planning MEDEVAC operations, maintaining liaison with the medical brigade and

division patient movement cells, operating a MEDEVAC control cell, and advising on aircraft and patient movements.

SECTION IX – BRIGADE AVIATION ELEMENT

2-103. The BAE is a planning and coordination cell organic to all BCTs whose purpose is to incorporate aviation into the ground maneuver commander's scheme of maneuver. The BAE focuses on providing employment advice and initial planning for aviation missions, UAS, airspace planning and coordination, and synchronization with the tactical air control party and fire support element.

ORGANIZATION

2-104. The BAE is comprised of the following aviation personnel:

- Brigade aviation officer.
- Assistant brigade aviation officer.
- Aviation mission survivability officer.
- UAS officer.
- Operations sergeant.
- Assistant operations sergeant.
- Operations specialist.

CAPABILITIES

2-105. The BAE performs the following tasks:

- Integrating and synchronizing of aviation into the supported unit's scheme of maneuver with guidance from the CAB as necessary.
- Employing planning advice for the employment of all manned and unmanned Army Aviation units designated to support the BCT.
- Tracking status of aviation assets in support of the BCT.
- Directly coordinating with CAB and aviation task forces.
- Closely integrating and synchronizing with LNOs and fire support officers.
- Airspace planning and execution.
- Enabling C2 of current operations.
- Managing organic BCT small UAS and tactical UAS safety, mission survivability, individual flight records, and aircrew training program.

SECTION X – LIAISONS

2-106. An LNO or liaison team represents the supporting CAB or ASTF/ABTF at the supported maneuver headquarters to conduct detailed planning and unit-to-unit coordination for the duration of a specific operation. LNOs facilitate coordination for operations with higher headquarters and/or supported ground maneuver units. Although the BAE conducts many of the functions traditionally performed by an LNO, the aviation LNO remains a critical part of the operations process and execution of combined arms operations. Refer to ATP 3-04.1 and FM 6-0 for more information regarding duties of the BAE or LNO. ECAB and TAB headquarters each contain an aviation LNO position, but CABs do not contain this position by modified table of organization and equipment force. Aviation battalions typically contain a two-person LNO element to represent their units as directed to facilitate planning and execution of large-scale combat operations.

DUTIES

2-107. LNOs participate in the supported unit's operations process and ensure aviation is effectively integrated into planning. LNOs ensure supportability of courses of action and relay a clear task and purpose to the parent aviation unit. Unit commanders empower LNOs to act on their behalf and ensure liaison teams are fully resourced. LNOs maintain positive two-way communications with their parent aviation unit and do not commit assets or approve changes to a plan without coordinating with the unit operations officer or commander. LNOs perform the following tasks:

- Understand and incorporate capabilities, limitations, and tactical employment of aviation assets.
- Assist in the preparation of aviation estimates, plans, orders, and reports.
- Assist in planning aviation missions.
- Coordinate with airspace users and the higher airspace element for airspace management.
- Maintain the operational status of aviation assets and their impacts on the supported unit's mission.
- Inform appropriate aviation units of current and possible future operations.
- Maintain continuous communications with aviation units supporting the ground unit.
- Attend targeting, information collection, sustainment, movement, and airspace working groups/mission analysis events.

2-108. In general, the CAB sends a battalion-level LNO team to a supported ground maneuver battalion since ground maneuver battalions do not possess a BAE expert at that level. The LNO team should have commissioned or warrant officers with operational experience in the employment of aviation assets for all seven aviation core competencies. Their employment is temporary and mission-specific, since LNO team members perform other functions within the ASTF/ABTF or CAB staffs.

CAPABILITIES

2-109. LNOs have access to current battalion status information to provide the most accurate common operational picture of aviation capabilities. LNOs or liaison teams should be equipped and manned to support 24-hour operations. Minimum equipment includes the following:

- Compatible automation equipment to provide connectivity between the supported unit and the aviation battalion headquarters.
- Necessary vehicles and equipment required to operate on the move.
- Two single-channel ground and airborne radio systems and supporting antennas/equipment to monitor command nets and communicate with aviation units.
- Map of the AO with supporting battle-tracking tools and equipment.
- Appropriate FMs, ATPs, TCs, SOPs, charts, and checklists to assist in aviation planning and integration.

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Chapter 3

Army Aviation Operations

All aviation operations are planned and executed according to the operations process. Commanders balance deliberate employment as a massed force while ensuring a reserve force is available for a flexible and rapid (hasty) response to a contingency. Mass enables the combined arms team to gain and maintain situational understanding; control operational tempo; achieve the element of surprise; seize, retain, and exploit the initiative; present the enemy with multiple dilemmas; gain physical, human, and information advantages over an enemy force; and/or prevent an enemy force from gaining such relative advantages. (During the planning and preparation phases of operations, commanders should provide subordinate units time to recover from previous missions or prepare for upcoming tasks; this may affect operations depending on the amount of preparation required.)

The aviation brigade's higher headquarter (corps/division) provides mission tasks, allocates resources, and synchronizes operations. Aviation brigade commanders will determine the appropriate subordinate unit to execute mission tasks, and further allocates assigned resources. Subordinate commander plans and leads detailed mission planning for execution and if required, determines the platforms and task organization.

Aviation core competencies, as discussed in chapter 1, are specifically executed through the following operations and tasks: movement to contact, attack, reconnaissance, security, air assault, aerial command and control, aerial retransmission, PR, air movement, aerial munition delivery, aeromedical evacuation (AE), and CASEVAC. For more information regarding aviation operations, refer to ATP 3-04.1.

SECTION I – MOVEMENT TO CONTACT

3-1. A *movement to contact* is a type of offensive operation designed to establish or regain contact to develop the situation (FM 3-90). Executing a movement to contact enables freedom of action to develop the situation and creates favorable conditions to conduct subsequent offensive or enabling operations either by the force conducting the movement to contact or a follow-on main body force. Army Aviation's attack and reconnaissance units' speed, range, lethality, long-range communications, and battlefield curiosity make them ideally suited to conduct movement to contact. Army Aviation executes movement to contact at the platoon to battalion/squadron level, either independently, or as a member of the combined arms team. In either case, the movement to contact is organized with the smallest acceptable security force forward to initially gain and maintain contact with the enemy with unmanned platforms if possible and a separate force capable of developing the situation based on the size of the expected enemy force and commander's intent. The following fundamentals of movement to contact provide the framework for planning and execution per FM 3-90; these fundamentals are applicable to both ground and aviation maneuver:

- Focus all efforts on finding the enemy.
- The initial contact force should be small, mobile, self-contained, and avoid becoming decisively engaged by the enemy's main body (unmanned platforms).
- Task-organize the force and use movement formations and battle drills to deploy and attack rapidly in any direction.
- Keep subordinate forces within supporting distances to facilitate gaining and maintaining contact.
- Upon gaining contact, maintain that contact regardless of the course of action adopted.
- Close air support, air interdiction, and counterair operations are essential to the success of large scale movements to contact. Local air superiority or, at a minimum, air parity is vital to the operation's success.

3-2. Attack or reconnaissance units plan and execute an enemy focused zone reconnaissance as their part of a larger unit movement to contact. The aviation unit commander determines and coordinates with higher

headquarters on the location and number of FARPs/AFARs and UAS launch and recovery locations based on the depth and breadth of the AO, time allocated, size of the aviation force, and the supported commander's intent. To maintain continuous reconnaissance, the attack or reconnaissance unit rotates manned and unmanned aircraft as necessary. Continuous rotations of these teams increase the depth and breadth of this aviation reconnaissance effort. It also enhances the survivability of aviation assets, enables persistent reconnaissance in zone with increased capability to gain and maintain enemy contact, and provides more options to develop the situation with maneuver and fires.

3-3. Once the attack or reconnaissance unit gains contact with the enemy and performs initial actions on contact, its aircraft deploy into observation posts or battle positions. See FM 3-90 for more details regarding actions on contact. The aviation unit, if directed, may take the initiative to execute a selected action while simultaneously recommending it to the higher commander. If the size or composition of the enemy force meets bypass criteria per the supported commander's intent, the enemy is reported and bypassed to continue the movement to contact. The unit keeps the bypassed force under observation, unless otherwise directed. This observation may be maintained using unmanned systems. If the size and composition of the enemy force meets engagement criteria, the aviation unit commander may attack to fix or finish the enemy. See FM 3-90 for more details on the tactical framework, which applies to all offensive and defensive operations. The unit may transition to a screen if the enemy force is too large or conduct a battle handover to a ground maneuver force to further develop the situation. Figure 3-1 provides an example of movement to contact.

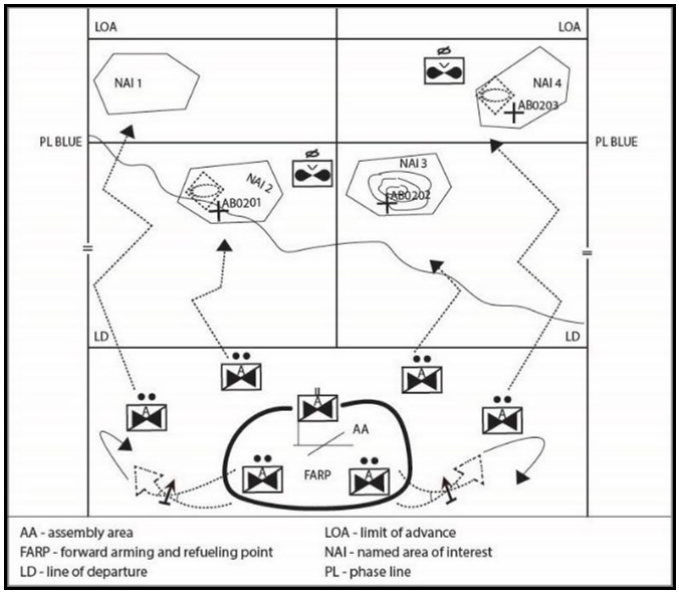

Figure 3–1. Air cavalry squadron conducts movement to contact

3-4. The size of the area, distance to the area, enemy situation in and en route to the area, and whether the area will be occupied in the future drives the task organization and scheme of maneuver for the aviation reconnaissance force. The control measures and critical reconnaissance tasks for an area reconnaissance are the same as a zone reconnaissance.

3-5. The aviation unit's IPOE focus is terrain for ground maneuver, LZs, PZs, FARPs/AFARs, and air routes. Furthermore, unusable terrain for ground forces may provide the best route selection for aerial ingress and egress. Refer to ATP 2-01.3 for further reading of IPOE. Aviation unit IPOE should also focus on natural obstacles, known man-made obstacles, and terrain that is best suited for emplacement of enemy obstacles that may disrupt friendly ground maneuver.

3-6. If a battle handover to ground units is expected, IPOE should also focus on the terrain that enables effective battle handover on terrain most favorable for friendly ground maneuver forces to develop the situation. Based on the complexity of the OE and expected size of the enemy force, the planning, prioritization, and use of joint fires may be required to successfully complete the mission and prevent premature decisive engagement or commitment of the follow-on force.

3-7. The inherent risks with movement to contact are driven by the unknown enemy situation, complexity of continuous reliefs on station, battle handover transitions, and the hasty nature of developing the situation while in contact. To mitigate risk, commanders should—

- Plan deliberate MTC based on higher echelons continuously updated information collection matrix and targeting process.
- Use the minimal security force required to gain contact while accomplishing the mission within the allotted time.
- Maximize the use of UAS forward to provide reaction time and maneuver space.
- Provide subordinates with control measures for not only their own AOs but also adjacent AOs to control and deconflict maneuver and fires.
- Develop and coordinate ACMs to enable freedom of action of manned and unmanned systems and offensive and defensive fires.
- Plan, employ, and provide aerial observation of Army or joint fires throughout the depth of the zone.
- Employ communications relay packages and enable C2 aircraft to maintain communications over extended distances.
- Position FARPs/AFARs, UAS launch locations, and holding areas forward to enable rapid turns of combat power once enemy contact is gained.
- And most importantly, use speed and audacity to develop the situation upon gaining contact.

SECTION II – ATTACK

3-8. As a combined arms team, an *attack* is a type of offensive operation that defeats enemy forces, seizes terrain or secures terrain (FM 3-90). Army Aviation conducts attacks at multiple echelons in support of offensive, defensive, and stability operations throughout the depth of the AO. These can range from elements as small as a single armed UAS or selection of aircraft, up to battalion or squadron level. Army Aviation attacks are executed as either deliberate or hasty operations to attack by fire, destroy, disrupt, interdict, isolate, neutralize, reduce, support by fire or suppress enemy forces.

3-9. To ensure attack operations are decisive, Army Aviation leverages the characteristics of the offense (see FM 3-90) attacking with the necessary combat power, tempo, and intensity to overwhelm the enemy force (further described later in this chapter). Audacity, speed, concentration of combat power at the right time and place, violence of execution, a deliberate targeting process, continuously updated information collection matrix to synchronize and integrate fires, and maximizing the element of surprise are all essential components of successful Army Aviation attacks.

CLOSE ATTACK

3-10. ***Close attacks*** **are engagements conducted against enemy forces within direct fire range seeking to mass direct, indirect, and aerial fires against a friendly force.** Close attack involves detail integration between ground commander's at echelons below the brigade level and aviation commanders in order to prevent fratricide, deconflict airspace, enable proper weaponeering, and target enemy forces.

3-11. Close attack enables the higher commander to bring Army Aviation combat power to bear simultaneously with other elements of the combined arms team. The combined effects of aerial and ground fire and maneuver increase the combined lethality and survivability of the combined arms team, enabling the commander to present the enemy with multiple dilemmas while dictating the tempo of operations to gain and maintain relative advantages.

3-12. Ground commanders that plan for the possible employment of both hasty and deliberate attacks throughout the depth of their close fight scheme of maneuver increase the likelihood of success and reduce the risk of fratricide. Deliberate attacks are fully integrated in the ground scheme of maneuver, adequately planned, properly resourced, and rehearsed. This integration enables the maneuver commander to maximize all available combat power at the chosen place and time. Hasty attacks against fleeting targets lack adequate time to conduct planning, resourcing, confirmation of external assets, and the rehearsals of combat arms scheme of maneuver. However, such attacks provide the combined arms team with the agility, mobility, and firepower to rapidly respond to unexpected enemy contact. Hasty attacks should be in extremis and not relied

on to overcome a lack of planning for the employment and full integration of Army Aviation attacks in the ground scheme of maneuver during the operations process (figure 3-2).

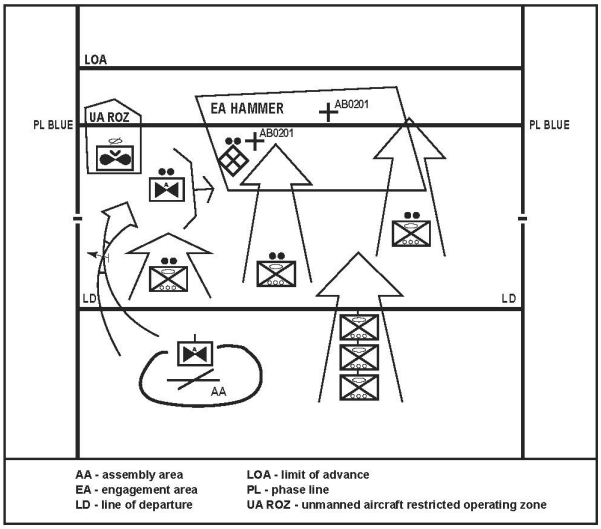

Figure 3–2. Deliberate attack by an attack company in support of a Stryker battalion conducting a movement to contact

3-13. Figure 3-3 is an example of an attack company using MUM-T capabilities while conducting area reconnaissance. The attack company is dynamically re-tasked by the supported higher headquarters to conduct a hasty attack in reaction to an unexpected enemy attack on a friendly convoy. Upon re-tasking, the air mission commander directs the UAS aircraft commander to continue the area reconnaissance mission and repositions the attack aircraft to the location of the contact. The friendly convoy commander uses the standard Army attack aviation call for fire to enable the team to conduct the hasty attack. Refer to ATP 3-09.32/MCRP 3-31.3/NTTP 3-09.2/AFTTP 3-2.6 for more information. The air mission commander gains situational understanding of the friendly and enemy forces and attacks to destroy the enemy force under the control of the ground commander in contact. The destruction of the enemy force enables the convoy to break contact and continue the mission. Following the attack, the air mission commander provides battle damage assessment, reports to higher headquarters, and repositions to continue the area reconnaissance mission as directed.

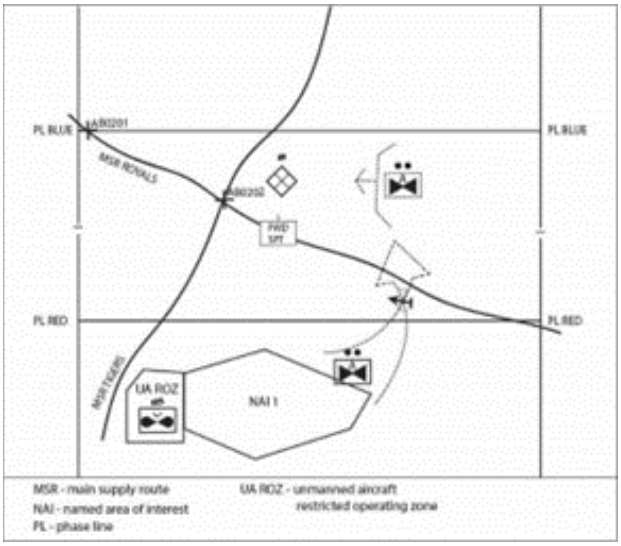

Figure 3–3. Hasty attack by an attack platoon reacting to troops in contact

3-14. Figure 3-4 is an example of an attack company employing MUM-T attacks in support of an area defense to destroy the advance guard of an attacking enemy force in a preplanned engagement area located in the BCT's main battle area. The purpose of the attack is to prevent the enemy from penetrating the defense and gaining a position of advantage. The BCT staff, in coordination with the supporting AB staff or aviation LNO team, plans the attack with pre-planned attack routes with timed passage of lines, engagement areas with layered target reference points, integrated joint fire, and multiple attack by fire positions to effectively engage and destroy the advancing enemy force throughout the depth of the engagement area. The movement of the enemy force in relation to UAS-observed named areas of interest triggers the timing of the attack. The detailed planning and support from higher echelons of command enables the success of this interdependent and fully integrated deliberate attack against an enemy force in close contact with friendly forces.

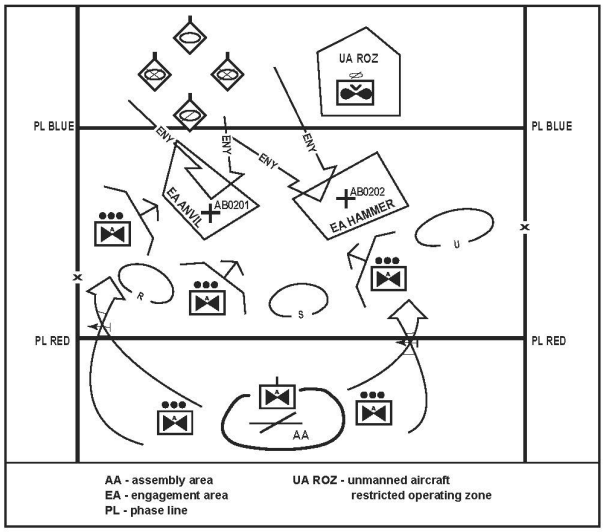

Figure 3–4. Deliberate attack by an attack company in support of a BCT's area defense

3-15. During the planning process, the ground maneuver commander integrates attack or reconnaissance unit employment into the ground tactical plan as a maneuver element. Unit airspace planning and updated common operating graphic control measures improve synchronization within close and deep operations. Requesting and allocating echelons above brigade fires and effects, joint collection, protection and sustainment assets, and over the horizon command and control provides a foundation for the successful integration of Army Aviation into the unit's operation. During close attack hasty mission planning, habitual command post exercises, and combined arms training using standardized procedures increases the likelihood of successful aviation employment. The lack of habitual training and standardized products increases the tactical risk of fratricide and decrease situational awareness. The use of standardized Army attack aviation call for fire and joint fires procedures mitigates risk and ensure the ground commander in contact provides the minimum essential information to the attack air mission commander.

3-16. In division close and deep operations, combined arms teams and aviation planners request joint and organic collection assets to confirm the presence or absence of enemy activity, EW to defeat or disrupt enemy early warning capabilities, and suppression of enemy air defense or destruction of enemy air defense effects to enable Army Aviation operations throughout the OE. Planners also anticipate requirements for jump and silent FARP or AFAR locations based on the necessity to extend operational reach or endurance of attack and reconnaissance units. Refer to ATP 3-04.17.

3-17. To enable permissive fires and the deconfliction of airspace, the supported ground unit and air planners must work together to develop a unit airspace plan that both enables employment of Army Aviation units and ensures rapid and timely fires. Careful consideration should be given when selecting fire support coordination measures and ACMs that restricts or slows down the responsive fires and effects within the division close and deep areas. Refer to JP 3-52.

3-18. Combined arms team and aviation planners should take every opportunity to conduct rehearsals to synchronize the successful integration of Army Aviation into the ground scheme of maneuver or any of the

warfighting functions. Combined arms, fires, and sustainment rehearsals benefit planners and Army aviation units with the opportunity to understand aspects of the operations such as but not limited to tempo, sequencing, and massing of effects. The use of standardized planning products and graphics such as but not limited to decision support matrixes, execution checklists, and commander critical information requirements helps ensure shared understanding throughout the operation.

DEEP ATTACK

3-19. ***Deep attacks*** **are attacks conducted against enemy forces out of direct fire range of friendly forces to shape future operations.** They involve detailed integration at the division level and above to set conditions for success during close operations and to influence future battles. The higher headquarters assigning the attack mission coordinates the required airspace with the appropriate airspace authority. Deep attacks are executed in support of division or higher headquarters that can develop target fidelity, provide enablers to support the attack, and assign a subordinate AO to the attack or reconnaissance unit.

3-20. These attacks are conducted at such a distance from friendly ground forces that detailed integration with them during actions on the objective is typically not required. Based on the nature of the target and complexity of the OE, deep attacks may provide opportunity for hasty attacks, but they are most often deliberate attacks. Deep attacks require detailed planning and the simultaneous or sequential employment of many joint enabling assets to mass effects and achieve the commander's intent.

3-21. Based on mission and operational variables, deep attacks range in risk levels for the operation. They may be conducted by elements ranging in size from a single armed UAS up to battalion or squadron level. The decision to execute deep attacks must be based on the overall operational risk versus the reward of successful execution within the higher headquarters scheme of maneuver. Higher mission risk requires the supported higher headquarters to prioritize required enabling capabilities to set conditions for the success of the aviation unit conducting the deep attack. These capabilities include but are not limited to providing continuous reconnaissance and target development, and in-depth integration of joint fires, EW, and CEMA capabilities. Detailed rehearsals and conditions checks are conducted prior to execution. Consideration must also be given to how long attack assets are committed to higher-risk attacks and weighed against the totality of the operational risk to other ongoing or pending operations.

3-22. Hasty attacks against emerging enemy targets of opportunity are based on mission variables. If the enemy target is high payoff and outweighs the risk of friendly losses or if the enemy threat to aviation is known to be acceptable for hasty operations, hasty deep attacks can be effective in seizing emerging opportunities to prevent the enemy from gaining a position of relative advantage.

3-23. Army Aviation units conduct deep attacks throughout the depth and breadth of an AO. They may be conducted beyond the forward line of own troops in linear, contiguous AOs; in deep areas between non-linear and non-contiguous AOs; in close or rear areas inside large non-linear and contiguous AOs where ground forces are not present or not in contact with the targeted enemy force; or in joint operations areas or joint special operations areas where friendly ground or surface forces may or may not be present and may be in contact with the targeted enemy force. Figure 3-5, page 57, provides an example of a hasty attack by an attack company against an enemy force.

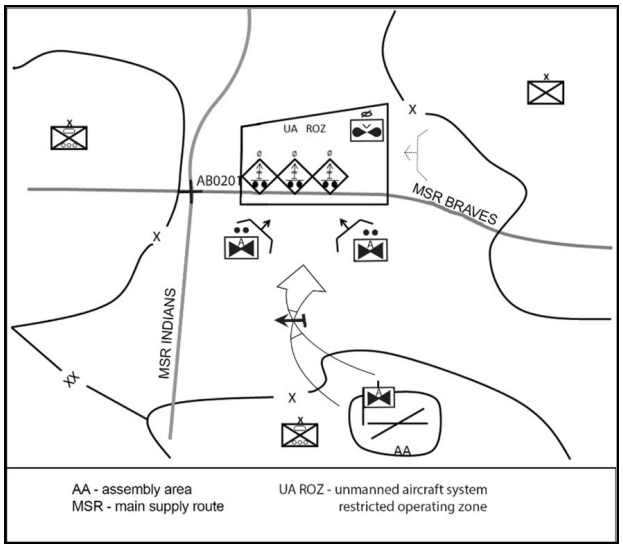

Figure 3–5. Hasty attack by an attack company against an enemy force

3-24. The inherent risks with hasty and deliberate deep attacks are driven by the fidelity of the enemy situation enroute to, from, and in the AO; the depth and duration of the attack; the size and capabilities of the enemy force being attacked; the fidelity of the target location; the proximity and capabilities of adjacent enemy forces; the time of day and weather conditions; and the proximity and capabilities of friendly ground maneuver forces. To mitigate risk and when time is available, the assigning higher headquarters and attack aviation staffs focus the operations process on the following:

- Target development, location, and refinement.
- Integration of joint fires and other enablers.
- Maximizing the use of UAS forward to confirm target location and disposition. During early phases of shaping prior to an attack, armed UAS may provide critical intelligence and targeting capabilities of enemy air defenses. During execution phases, UAS flying ahead of attack helicopters may locate surviving air defense systems prior to them targeting manned aircraft.
- Maximizing the use of terrain to mask maneuver along routes, attack by fire, and battle positions.
- Developing and coordinating ACMs to enable freedom of action for multiplatform MUM-T and other ongoing friendly operations.
- Planning the integration of joint fires and enablers to allow continuous target refinement, joint suppression of enemy air defense, and joint EW—all of which limit enemy freedom of action.
- Planning, developing, and adhering to triggers and conditions to initiate the attack.
- Employing radio retransmission sites, aerial communications relay packages, and/or forward UAS ground control stations to maintain situational understanding over extended distances.
- Positioning multiple FARPs/AFARs forward to maximize weapons loads and station time while considering arming and refueling site survivability and capability.
- Maximizing the element of surprise by attacking from unexpected directions and unexpected times with speed and audacity.
- Executing during hours of limited visibility.
- Conducting detailed rehearsals and employing appropriate decision support tools such as conditions checks, go/no-go criteria, abort criteria, and decision support matrices.

EMPLOYMENT METHODS

3-25. Timing is critical to successful aviation attacks. Employed too early, the attack may culminate because of aircraft low on fuel and increase tactical risk due to extended loitering times near the EA. Aircraft arriving to their attack by fire positions too late may miss all or part of the targeted unit and fail to achieve mission success. Intelligence requirements and collection plans at echelon are critical to ensure proper timing of attacks.

3-26. The commander plans an attack after detailed coordination with subordinate units, support elements, and higher headquarters to ensure shared understanding of higher intent and the capabilities of the attack unit. The commander may employ subordinate units in the following methods:

- Continuous attack.
- Phased attack.
- Maximum destruction attack.

3-27. While the examples below describe employment of attack companies, the concepts may be scaled down to section level or up to battalion/squadron level.

CONTINUOUS ATTACK

3-28. To exert constant pressure on an enemy force, the battalion commander employs companies using the continuous attack method (figure 3-6). This method ensures at least one company is always in the battle. While one company is engaged in the battle, the other two companies prepare to relieve the engaged company by positioning at the holding area or FARP/AFAR or maneuvering to the battle position or attack by fire position. The continuous attack method provides the commander with the most flexibility as well as the most efficient operation of the FARP or AFAR. Depending on sustainment capabilities, operational tempo, number of aircraft committed to an operation, and the extended time on station and loiter capabilities of UAS, a battalion or squadron may be able to sustain a continuous operation for several days.

3-29. This method is typically employed against enemies in fixed positions or when multiple echelons are maneuvering through an EA. This method also requires multiple ingress and egress routes for rotating aviation forces to minimize repeated overflight of unsecured terrain.

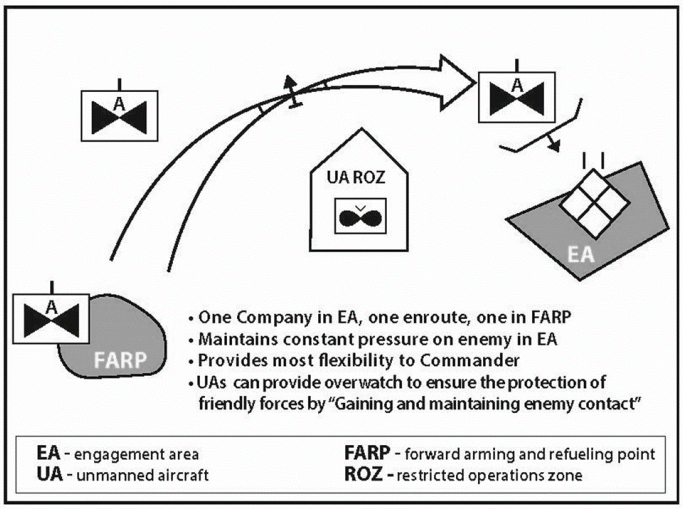

Figure 3–6. Continuous attack

PHASE ATTACK

3-30. To exert increased firepower on an enemy force, the battalion commander employs one company as a shaping operation to begin attacking the enemy and then quickly phases in a second company from a different battle position or attack by fire position (figure 3-7, page 59). The third company is phased into the fight as a reserve element when either of the other companies is low on fuel or ammunition. The commander may choose to modify this method of employment. For example, one company may be employed to shape for the other companies to exploit as the main body. During the phased attack, it is important to minimize aircraft turnaround time at the FARP/AFAR and maximize the use of UAS to gain and maintain continuous enemy contact to provide situation updates during different phases of the attack. Generally, the phased attack eventually reverts to the continuous attack method due to FARP/AFAR limitations. A battalion or squadron typically conducts a phased attack for less than 24 hours and requires up to 24 hours afterwards to resume normal operations.

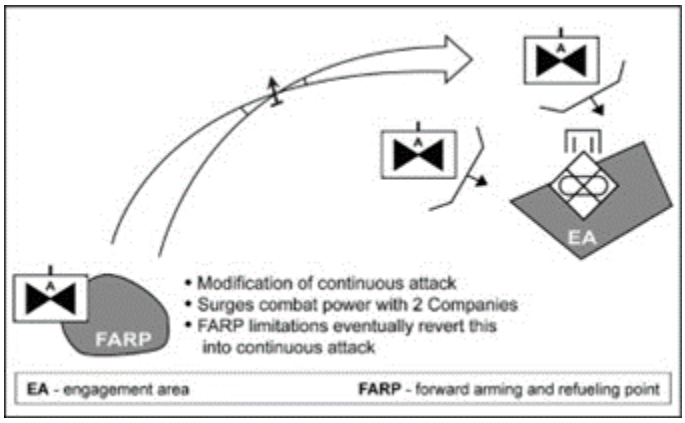

Figure 3–7. Phased attack

MAXIMUM DESTRUCTION ATTACK

3-31. To exert the most combat power on an enemy force, the commander employs the maximum destruction method (figure 3-8). To overwhelm an enemy force with massed fires, the battalion attacks with all three companies simultaneously. While employing this method, it is important for the supported commander to understand the entire battalion may be out of the fight for 45 to 90 minutes at the completion of the initial attack. UAS capabilities can be utilized for the 45 to 90 minutes to prevent the loss of enemy contact. The time away from the fight is dependent on the distance to the FARP/AFAR and time required for refueling and rearming after the initial engagement. Employing a maximum destruction attack may result in a large portion of the battalion or squadron being unable to conduct further missions for at least 24 hours following the completion of the mission.

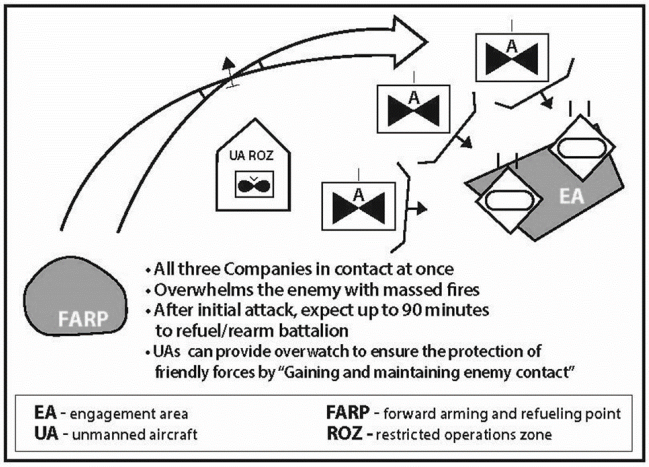

Figure 3–8. Maximum destruction attack

STRIKE COORDINATION AND RECONNAISSANCE TACTICS, TECHNIQUES, AND PROCEDURES

3-32. *Strike coordination and reconnaissance* (SCAR) is a mission flown for the purpose of detecting targets and coordinating or performing attack or reconnaissance on those targets (JP 3-03). It is a supporting operation to joint interdiction and is not conducted in close proximity to friendly forces. SCAR missions typically are requested by division or higher and are not self-generated by the CAB. Army Aviation's unique contributions include the ability to operate with lower ceilings and visibility, use the terrain to maneuver advantage, and MUM-T.

3-33. Army Aviation units may be tasked to conduct SCAR either inside the joint force land component commander's AO or outside the AO where Army assets are made available for tasking to the joint force air component commander. SCAR missions are flown in a specific geographic area and are used to match weapons effects with targets per the joint integrated prioritized target list and/or echelon high payoff target list. A SCAR mission is designed to initially locate targets; perform reconnaissance and/or attack/generate desired effects (using interdiction rules of engagement); and conduct associated battle damage assessment effectively and efficiently. A SCAR aircrew coordinates target identification and subsequent attacks using multiple reconnaissance and strike assets.

3-34. Army Aviation operations that can support SCAR tasking include movement to contact, zone reconnaissance, and deep attack. If required to serve as a SCAR aircrew, Army aircrews must fully understand the airspace C2 structure and be prepared to deconflict and cycle multiple air interdiction assets through the target area, coordinate surface fires, and provide updated prioritized targeting guidance and enemy air defense updates to maximize the effect of each sortie. For further information on SCAR, refer to ATP 3-60.2. Units planning SCAR missions need to develop appropriate ACMs (airspace control areas/kill boxes) to protect aircrews and enable mission success; see ATP 3-09.34/MCRP 3-31.4/ NTTP 3-09.2.1/AFTTP 3-2.59 for more information.

ROTARY-WING/UAS CLOSE AIR SUPPORT

3-35. *Close air support* (CAS) is air action by aircraft against hostile targets that are in close proximity to friendly forces and that require detailed integration of each air mission with the fire and movement of those forces (JP 3-09.3). Aircrews that conduct CAS should be familiar with ATP 3-09.32/MCRP 3-31.3/NTTP 3-09.2/AFTTP 3-2.6. As the aviation element of the ground maneuver plan, Army Aviation is not normally tasked by the joint force air component commander to support the JFC's CAS or air interdiction apportionment guidance. However, attack or reconnaissance units must be familiar with and able to respond to and execute according to terminal CAS procedures and tactics, techniques, and procedures when they accept terminal control by a joint terminal air controller or forward air controller (airborne) during mission execution in support of the joint force. The CAS tactics, techniques, and procedures requires the use of a joint terminal air controller or forward air controller (airborne) who is a qualified (certified) service member and directs the action of combat aircraft engaged in CAS and other air operations. Refer to appendix A for CAS procedures.

UNIQUE PLANNING CONSIDERATIONS FOR ATTACKS

3-36. When determining what level of planning and preparation is required to execute an attack, the commander must balance the potential advantage of executing with tempo and surprise based on minimum mission essential information versus using additional time to develop greater understanding of the friendly forces, terrain, weather, and enemy forces. Refer to ATP 3-04.1 for more information. Taking too much time to develop perfect information can paralyze the operations process, enable the enemy to continue to prepare or move, and may result in missed opportunities to seize the initiative. It is normally better to err on the side of speed, audacity, and momentum, with the minimum mission essential information, than to attempt to gain complete situational understanding prior to conducting attacks. Bold decisions give the best promise of success; commanders must be able to distinguish accepting prudent risk versus taking a gamble on poor or incomplete information. Accepting prudent risk requires judgment, foresight, and adequate planning to determine whether an operation is worth conducting. Maintaining running estimates while executing continuous reconnaissance and target development mitigates risk and enables commanders to have greater agility and shorter planning cycles to conduct both hasty and deliberate attacks against enemy forces that are in or out of contact with friendly forces.

3-37. When planning attack operations, IPOE efforts are focused on determining the location, composition, disposition, capabilities, and most likely and most dangerous courses of action of the targeted enemy force. IPOE also focuses on detailed terrain analysis to inform planning for attack routes, attack by fire positions, engagement areas, fire support targets, and holding areas, as well as the effects on enemy movement rates and formations. Refer to ATP 3-04.1 for aviation specific considerations. The commander communicates the concept of the operation to senior leaders using air axes of advance to enable shared understanding. He controls the operation by using maneuver control measures, fire support coordination measures, and ACMs.

3-38. During execution, Army Aviation attack or reconnaissance units use maneuver and direct and/or indirect joint fires to place the enemy in a position of disadvantage. To achieve superiority over the enemy, the commander must take advantage of the range, precision, and lethality of all available fires. They also must gain and maintain information superiority through in-depth reconnaissance and continuous maneuver to positions of advantage using speed, maneuverability, maximum standoff, and available terrain.

3-39. In certain situations, the Army aircrew may have the highest situational awareness and be delegated tactical lead for coordinated attacks. An aircraft given the tactical lead does not have terminal attack control responsibilities; rather the tactical lead should ensure deconfliction between all aircraft is maintained and recommend attack geometry and timing between flights/sections. Refer to ATP 3-09.32/MCRP 3-31.3/NTTP 3-09.2/AFTTP 3-2.6 for further guidance.

SECTION III - RECONNAISSANCE

3-40. This section augments the reconnaissance doctrine found in FM 3-90 and FM 3-98 as it relates to Army Aviation. For further information on reconnaissance operations, the reader should refer to these source publications.

3-41. *Reconnaissance* is a mission undertaken to obtain information about the activities and resources of an enemy or adversary, or to secure data concerning the meteorological, hydrographic, geographic, or other characteristics of a particular area, by visual observation or other detection methods (JP 2-0). Reconnaissance operations enable the division/corps commander to understand the situation and visualize the battlefield by identifying where the enemy is weak or strong, the best place or opportunity to concentrate combat power to gain and maintain a position of relative advantage, or where and when to best deny the enemy a position of relative advantage. For more information on reconnaissance, refer to FM 3-90 and FM 3-98; FM 6-99 contains appropriate formats for bridge, route, and patrol reports.

3-42. Aerial reconnaissance serves as a link between sensors and mounted or dismounted units and is used to manage reconnaissance operations through cueing, mixing, and redundancy, thereby decreasing mission risk. Aerial reconnaissance is appropriate when—

- Time is limited or information is required quickly.
- Restrictive or severely restrictive terrain limits ground scheme of maneuver.
- The enemy situation is vague but considered to be high risk or is known and is high risk for ground assets.

3-43. Army Aviation conducts reconnaissance as part of its parent organization's focused information collection efforts. While attack battalions have the equipment to conduct reconnaissance, ACSs and the Gray Eagle Company are primarily trained to execute this mission. ACSs are expected to operate with incomplete orders, limited guidance, and limited time. Due to time constraints and inherent parallel planning considerations, an ACS should be deeply integrated into the supported headquarters' reconnaissance planning efforts. It is critical to receive commander's reconnaissance guidance, PIRs, and reconnaissance objectives from the higher echelon commander to formulate an acceptable course of action for execution generally found in paragraph 3 and Annex L of an operations order. Reconnaissance is conducted before, during, and after operations. Before operations, aerial reconnaissance through a reconnaissance pull is to inform the IPOE process and assist the commander with the formulation, confirmation, or modification of a course of action. Later in the planning process a reconnaissance push can be executed to finalize the plan, confirm, and shape operations. During the mission, reconnaissance enables the commander to rapidly make decisions and, if required, execute the decision support matrix.

3-44. Army Aviation reconnaissance or attack units are specifically equipped, trained, and organized to conduct or support all forms of reconnaissance except special reconnaissance. Army Aviation conducts reconnaissance at all echelons, from elements as small as a single UAS up to elements as large as an ACS, either independently as a pure aviation maneuver force or as part of a deliberately planned scheme of maneuver as a member of the combined arms team. The size of the aviation reconnaissance force is driven by the size of the assigned area, complexity and number of reconnaissance objectives, fidelity of the information required by the commander, the enemy situation, and the time available to answer the commander's specified information requirements. Refer to FM 3-98 for specific elements that shape the commander's reconnaissance guidance.

3-45. A reconnaissance objective can be oriented on a threat, weather, infrastructure, terrain, or societal features about which the commander requires further information. It is intrinsically linked with the PIRs, which are provided the higher headquarters commander. The PIR drives the aviation commander and staff to develop and refine the commander's reconnaissance guidance. This guidance maximizes the use of aviation reconnaissance assets to complete the mission rapidly and accurately and determine the aerial reconnaissance objective. Based on the capabilities of and time available to the reconnaissance force, the commander and staff further delineate the priority of tasks and information collection efforts to ensure the most critical information is collected to enable timely decisions. The latest time the required information is of value with date-time group, and an end state that defines how the reconnaissance effort influences follow-on operations. The event template, terrain analysis, and enemy situational template create information requirements that focuses the collection effort and reconnaissance objective as part of the information collection matrix.

3-46. The commander controls the reconnaissance operation by using routes, subordinate unit boundaries, phase lines, contact points, checkpoints, named areas of interest, fire support coordination measures, ACMs, and objectives. Some of these items may be aviation specific or used by both ground and aviation commanders. Such control measures allow for decentralized actions and small-unit initiative to the greatest extent possible. The reconnaissance begins at the line of departure or start point; the depth of the reconnaissance is controlled by using a limit of advance. Control measures are placed on recognizable terrain features when possible.

3-47. Army Aviation can conduct zone, route, and/or area reconnaissance as a stand-alone operation. Aviation units cannot complete reconnaissance in force operations as a stand-alone operation like a ground cavalry squadron (when augmented) or a BCT. (See FM 3-98.) These forms of reconnaissance allow the commander and staff to understand and visualize the environment, develop the situation, create options, and identify opportunities to seize, retain, and exploit the initiative. Reconnaissance forces must conduct reconnaissance handovers to maintain contact with the reconnaissance objective. Considerations include—

- Mixing, cueing, or redundant sensors to maintain contact.
- Location and criteria for reconnaissance handover.
- Communication, fires, and operations planning to facilitate.
- Rehearsals and standardized reporting.

FUNDAMENTALS OF RECONNAISSANCE

3-48. When planning and executing reconnaissance operations, application of the following seven fundamentals informs the operations process and drives execution of successful aerial reconnaissance missions.

3-49. **Gain and maintain enemy contact**. Using aerial or multiple technical means (refer to ATP 3-04.1), the aviation reconnaissance force locates and maintains enemy contact with the smallest force possible to prevent initial decisive engagement while retaining freedom to maneuver and adequate combat power to develop the situation. Based on the commander's intent and contact criteria, maintaining contact with the enemy force provides real-time information on the enemy's disposition, composition, strength, and actions to enable the commander to make timely and informed decisions based on current intelligence. Aviation units may have an advantage over ground units regarding maintaining enemy contact by utilizing MUM-T with UAS. Once contact is gained with an enemy force that does not meet bypass criteria, the aviation reconnaissance force does not relinquish contact until directed, reconnaissance handover is complete, or the enemy force is destroyed based on engagement criteria.

3-50. **Orient on the reconnaissance objective**. Commanders direct reconnaissance operations by establishing reconnaissance objectives with a specific task, purpose, and focus. Reconnaissance objectives enable the commander to focus the efforts of the reconnaissance force to ensure information requirements on the enemy, terrain, and civil populations are met within the required time. The enemy situation, time available, complexity of the terrain and the number, depth, and types of reconnaissance objectives drive the task organization and scheme of maneuver of the aviation reconnaissance force.

3-51. **Do not keep reconnaissance assets in reserve**. To provide continuous and focused reconnaissance requires commanders employ all available aviation assets against reconnaissance objectives; however, this does not necessarily mean to employ all assets simultaneously. Understanding the capabilities and limitations of each asset, for example station time for manned versus unmanned platforms, coupled with detailed

planning, enables commanders to ensure each available asset is employed to maximize its strengths while providing mutual support and redundant coverage to the entire collection effort throughout the depth of the AO. Aviation reconnaissance assets should not be assigned to the reserve, and the aviation commander must dialogue with the supported commander about the balance between capacity and coverage.

3-52. **Report all required information rapidly and accurately**. Quick and accurate positive and negative reporting is essential to ensure the commander receives the necessary information to make timely decisions. Reporting focuses on answering the commander's PIR. However, seldom can a PIR be answered on its own or in isolation. Therefore, PIRs are broken down into different elements and assigned as collection tasks within orders. Refer to ATP 2-01 for further information.

3-53. **Develop the situation rapidly**. Army Aviation performs reconnaissance with the tempo required to meet the requisite urgency to answer the necessary higher commander's information requirements. If contact is made with an enemy force, the aviation reconnaissance force reports immediately and conducts actions on contact to develop the situation to quickly determine the composition, disposition, strength, and activity of the enemy. Based on bypass, engagement, and reconnaissance handover criteria, the aviation reconnaissance force may transition to a hasty attack to destroy an enemy force, transition to a screen, and employ direct and indirect fires to harass and impede superior enemy forces, or report and bypass to continue the reconnaissance effort.

3-54. **Retain freedom of maneuver**. Mobility and maneuver are essential to successful aviation reconnaissance operations. Commanders consider how the aviation reconnaissance force is task-organized, the movement techniques used, and the planned scheme of maneuver, as well as bypass, reconnaissance handover, and engagement criteria to ensure the aviation reconnaissance force retains the freedom to maneuver to achieve the commander's end state. Decisive engagement may be necessary if fighting for information is required to fully develop the situation. However, it must be balanced against the time available to complete the mission and the risk of the reconnaissance force becoming decisively engaged and possibly defeated by a superior enemy force. Contacting the smallest possible enemy element, using redundant and different reconnaissance capabilities, conducting effective counter reconnaissance, maximizing stand-off, and employing suppressive direct and indirect fires (when authorized) all contribute to reducing tactical risk while enabling the aviation reconnaissance force to retain the freedom to maneuver.

3-55. **Ensure continuous reconnaissance**. Due to the dynamic nature of the OE, commanders ensure reconnaissance is conducted continuously throughout the duration of the mission. The use of UAS to provide persistent reconnaissance throughout the depth of the AO, coupled with attack and Scout companies/troops conducting continuous relief on station, ensures the aviation reconnaissance force provides continuous coverage of the designated reconnaissance objective. Continuous reconnaissance using UAS assets enables greater change detection in dynamic OEs, increased flexibility to maintain contact with acquired enemy forces, redundancy to enable detailed information collection to achieve reconnaissance objectives, and greater flexibility to further develop the situation when required.

3-56. At ABTF/ASTF level and above, processing, exploitation, and dissemination is the execution of the related functions that converts and refines reported data into usable information, distributes the information for further analysis, and provides combat information to commanders and staffs (ADP 2-0). Processing, exploitation, and dissemination is the link that ensures the efficient use and distribution of information following collection and reporting. While performing these functions, some of the information meets the criteria of combat information. In those cases, the combat information is disseminated to commanders and staffs per standard operating procedure.

ZONE RECONNAISSANCE

3-57. *Zone reconnaissance* is a form of reconnaissance operation that involves a directed effort to obtain detailed information on all routes, obstacles, terrain, and enemy forces within a zone defined by boundaries (FM 3-90). Commanders assign zone reconnaissance missions to gain detailed situational understanding when the enemy situation is vague and/or the understanding of the terrain is limited. Zone reconnaissance missions can be large, deliberate efforts to gain a significant amount of information. These missions can also be aggregated together by multiple smaller reconnaissance missions such as area and route reconnaissance. The aviation reconnaissance force commander must balance time and assets available against the urgency and number of information requirements required by the higher commander to ensure the force executes with

the right tempo. Aviation reconnaissance forces provide the combined arms team with increased reconnaissance depth, and speed, as well as long-range communications and the ability to conduct reconnaissance in complex or no-go terrain.

3-58. During offensive operations, an aviation zone reconnaissance is typically oriented forward of ground maneuver forces along an axis of attack or axis of advance. This enables friendly forces to maneuver within the zone at reduced risk due to greater situational understanding of the terrain, movement routes, obstacles, and enemy forces. During defensive operations, aviation forces may conduct a zone reconnaissance forward of a defensive position to locate enemy reconnaissance or to provide the commander with terrain information on where to best locate friendly obstacles, targets, engagement areas, and/or counter-attack routes. Zone reconnaissance typically transitions to a screen or other assigned follow-on mission when the limit of advance is reached or when contact is made with an enemy force that is superior in size or in a position of advantage to the aviation reconnaissance force. However, not all zone reconnaissance missions are conducted forward of friendly forces. An aviation zone reconnaissance may also be conducted to the rear or flanks of a friendly ground maneuver force to locate bypassed or infiltrating enemy forces or to provide the commander with greater situational understanding of the AO.

3-59. The size of the zone, number of reconnaissance objectives, mission duration, the latest time the information is of value, enemy situation, number of routes, number of built-up areas, and complexity of the terrain drives the reconnaissance tempo and the size and task organization of the aviation force conducting the zone reconnaissance. Although a reconnaissance or attack platoon can conduct zone reconnaissance in a small zone for a limited duration, zone reconnaissance missions typically require commitment of a troop/company or larger force. Figure 3-9, page 65, depicts an aviation element conducting zone reconnaissance.

3-60. Unless the higher commander orders otherwise, the aviation reconnaissance force executes the below listed critical tasks, adapted to aviation capabilities from FM 3-90 and FM 3-98, when assigned a zone reconnaissance mission:

- Find and report all enemy forces in zone.
- Based on engagement criteria, destroy, or defeat all enemy forces in zone within capability.
- Determine the trafficability of all terrain in zone.
- Conduct hasty visual inspection and classification of all bridges, overpasses, underpasses, and culverts in zone. Refer to FM 3-50 for further information on inspection and classification of these items.
- Locate and conduct hasty visual classification of all obstacles, minefields, built-up areas, and barriers in zone.
- Locate and conduct hasty visual classification of all fords, crossing sites, and bypasses around obstacles and built-up areas in zone.
- Report above information, to include providing a sketch map, overlay, and/or full-motion video feeds.

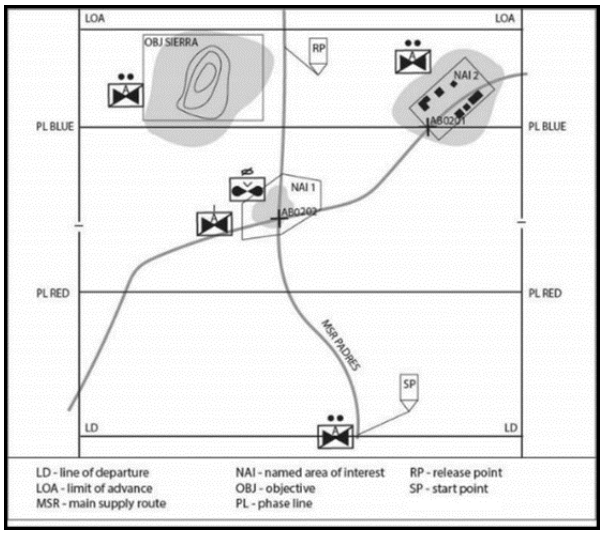

Figure 3–9. Air cavalry troop conducts a zone reconnaissance

AREA RECONNAISSANCE

3-61. *Area reconnaissance* is a type of reconnaissance operation that focuses on obtaining detailed information about the terrain or enemy activity within a prescribed area (FM 3-90). This reconnaissance has permissive boundaries that allow aerial reconnaissance elements freedom of maneuver to select ingress and egress routes. It requires the reconnoitering of the dominating terrain from which the enemy can employ itself or influence the area, a consideration where aviation forces can save the ground commander considerable time. The commander assigns area reconnaissance when information is more developed, when focused reconnaissance in the given area may yield specific information related to terrain or decision points, or when more detailed information is required in a designated area. The tasks for an area reconnaissance are the same as a zone reconnaissance, and the commander should provide focus to the unit in the commander's intent and commander's reconnaissance guidance.

3-62. Army Aviation conducts area reconnaissance with elements as small as a single UAS, up to elements as large as an ACS or AB, as a member of the combined arms team. The size of the area, distance to the area, enemy situation in and en route to the area, and whether the area will be occupied in the future drives the task organization and scheme of maneuver for the aviation reconnaissance force. The control measures and critical reconnaissance tasks for an area reconnaissance are the same as a zone reconnaissance. Figure 3-10, page 66, is an example of an air cavalry element conducting an area reconnaissance of terrain and man-made areas of interest.

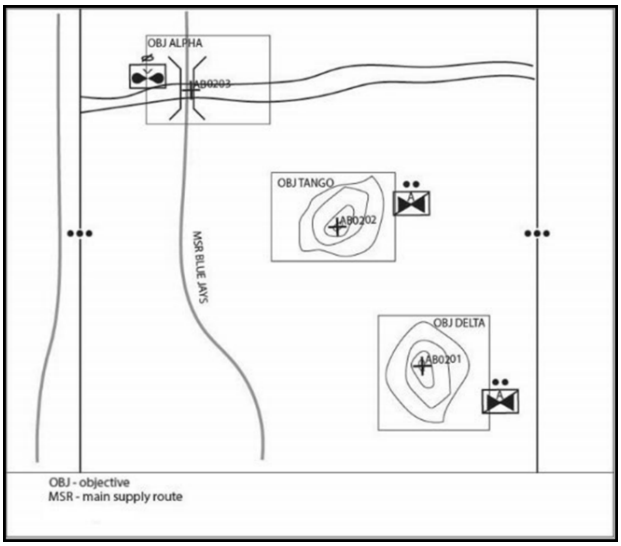

Figure 3–10. Air cavalry troop conducts three simultaneous area reconnaissance missions

ROUTE RECONNAISSANCE

3-63. *Route reconnaissance* is a directed effort to obtain detailed information of a specified route and all terrain from which the enemy could influence movement along that route (FM 3-90). (figure 3-11, page 67) The route may be a cross-country mobility corridor, an air route, or a road, highway, or trail. Route reconnaissance provides information on the condition and trafficability of the route, intersecting routes or mobility corridors, key terrain that directly influences the route, obstacles along the route, and any friendly, enemy, or civilian activity along the route.

3-64. Route reconnaissance is assigned either as a separate mission or as a specified task to a unit conducting a zone or area reconnaissance. Army Aviation conducts route reconnaissance with elements as small as a single UAS, to elements as large as an ACS, either independently as a pure aviation maneuver force or a member of the combined arms team.

3-65. The size of the aviation reconnaissance force is driven by the length of the route, complexity of the terrain, fidelity of the information required by the commander, the enemy situation, and the time available to answer the specified information requirements. If detailed information is required for route and bridge classification or obstacle clearance, the aviation reconnaissance force must be task-organized as a combined arms team. The control measures for an aviation route reconnaissance are the same as for ground; see FM 3-98.

3-66. Unless the higher commander orders otherwise, the aviation reconnaissance force executes the below listed critical tasks, adapted to aviation capabilities from FM 3-90 and FM 3-98, when assigned a route reconnaissance mission:

- Find and report all enemy forces that can influence movement along the route.
- Destroy enemy forces that can influence movement along the route, within capability.
- Determine route trafficability based on the size, capabilities, mission, and type of friendly force to use the route.
- Reconnoiter all terrain the enemy can use to influence the route.
- Reconnoiter all built-up areas, contaminated areas, and lateral routes along the route.
- Assess and evaluate within capability all bridges, defiles, overpasses, underpasses, and culverts along the route. Refer to FM 3-50 for further information regarding classification and inspection of these items.
- Locate and conduct initial assessment of all obstacles, minefields, built-up areas, wire obstacles, and barriers along the route.
- Locate and conduct initial assessment of all fords, crossing sites, and bypasses around obstacles and built-up areas along the route.

- Report the above information, to include providing a sketch map, route overlay, and/or full- motion video feeds.

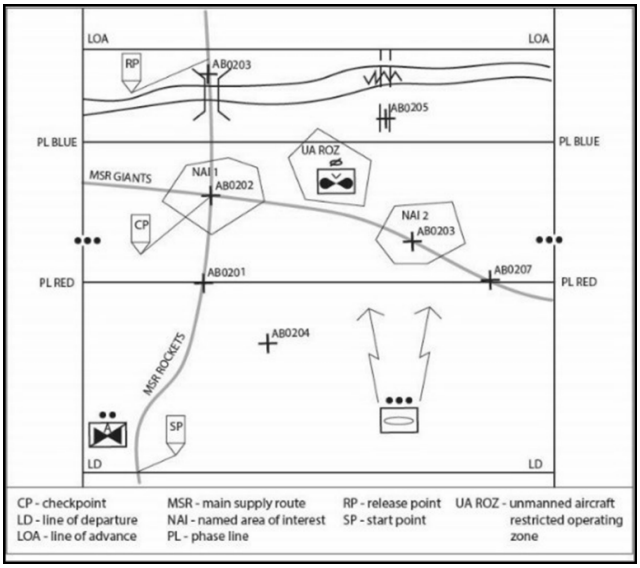

Figure 3–11. Air cavalry troop conducting route reconnaissance

RECONNAISSANCE IN FORCE

3-67. A *reconnaissance in force* is a form of reconnaissance operation designed to discover or test the enemy's strength, dispositions, and reactions or to obtain other information (FM 3-90). It is focused on enemy forces versus the terrain and typically seeks some level of direct contact. The commander plans for both the retrograde and reinforcement of the friendly force (in case it should encounter superior enemy forces) and for exploitation of its success.

3-68. An ACS or AB can conduct a reconnaissance in force when task-organized with adequate ground maneuver forces. Typically, Army Aviation is task-organized to the ground maneuver headquarters tasked with reconnaissance in force. During a reconnaissance in force, subordinate aviation elements may conduct the full range of Army Aviation core competencies.

3-69. The enemy situation, size of the zone, and the commander's follow-on concept of the operation drives the task organization and scheme of maneuver. The less that is known about the enemy, the greater the combat power required for the reconnaissance in force, for both ground and aviation forces. The control measures associated with a reconnaissance in force are like a movement to contact or attack.

3-70. The following tasks are accomplished by Army Aviation when supporting a reconnaissance in force:

- Penetrates the enemy's security area and determine its size and depth.
- Determines the location and disposition of enemy forces.
- Attacks enemy positions and attempts to force the enemy to react by using local reserves or major counterattack forces, employing fires and specific weapons systems, and adjusting positions.
- Determines enemy weaknesses that can be exploited.

SPECIAL RECONNAISSANCE

3-71. *Special reconnaissance* is characterized as reconnaissance and surveillance actions conducted as a special operation in hostile, denied, or politically sensitive environments to collect or verify information of strategic or operational significance, employing military capabilities not normally found in conventional forces (JP 3-05). Conventional Army Aviation units do not typically support special reconnaissance missions.

SECTION IV - SECURITY

3-72. This section augments the security doctrine found in FM 3-90 and FM 3-98 as it relates to Army Aviation. For further information on security operations, the reader should reference these source publications.

3-73. *Security operations* are those operations performed by commanders to provide early and accurate warning of enemy operations, to provide the forces being protected with time and maneuver space within which to react to the enemy, and to develop the situation to allow commanders to effectively use their protected forces (ADP 3-90).

3-74. Security operations prevent enemy assets from determining friendly locations, strengths, and weaknesses. Successful security operations strip an advancing enemy unit from their effective use of audacity, concentration, surprise, and tempo (characteristics of the offense). Most importantly, security operations prevent a protected, force, area, or facility from being surprised by an attacking enemy unit. In accordance with the issued commander's security guidance, aviation units perform or augment security operations by maximizing the strengths of the CAB. When properly employed, the CAB extends the depth, breadth, duration, and lethality of security operations.

3-75. Based on the OE and mission variables such as mission, enemy, terrain and weather, troops and support available, time available, civil considerations, and informational considerations (METT-TC[I]), the CAB performs or supports security operations by employing selected assets ranging in size from a single UAS up to the entire ACS. Employment of CAB assets requires careful and detailed planning at all tactical echelons. Conditions such as threat, duration of security, environmental factors, and high payoff targets assignments drastically alter the employment methods of the CAB. Division and potentially corps must be prepared to provide combat multipliers to the aviation mission, such as fires, FARP security, and coordination for multidomain effects.

3-76. The supported commander issues initial commander's security guidance to supporting units. Aviation commanders conducting security operations, at echelon must refine and nest their commander's security guidance specific to the size, composition, and capabilities of their aviation forces. Aviation security guidance should consist of focus, duration, and engagement, disengagement, bypass, and transition criteria. Refer to FM 3-98 for specific elements that shape the commander's reconnaissance guidance. Clear and concise commander's security guidance, as captured from aviation military decision-making process/rapid decision-making and synchronization process, and TLPs, permit aviation crews to take immediate actions against enemy units, thereby seizing and exploiting the initiative.

FUNDAMENTALS OF SECURITY

3-77. The five fundamentals of security are as follows.

3-78. **Maintain enemy contact**. Once the security force makes enemy contact, it does not break contact unless the main force commander specifically directs it to do so. (Refer to commander's security guidance bypass criteria.) Aviation units use their inherent agility to employ greater depth to security operations. Capitalizing on the use of multiple UAS, coupled with AH-64s operating in advantageous terrain, the CAB maintains visual and often electronic contact (MUM-T), while employing direct, indirect, and multidomain effects against the enemy unit. The security force must continuously collect information on the enemy's activities to assist the main body in determining potential and actual enemy courses of action and to prevent the enemy from surprising the main body.

3-79. **Orient on the protected force, area, or facility to be secured**. The security force focuses all its actions on protecting and providing early warning to the secured force or facility. The security force operates between the main body and known or suspected enemy units and must understand the main body's scheme of maneuver and fires. (Refer to commander's security guidance focus.) Aviation's agility makes it easier to move as the main body moves and orient on its movement. This fundamental serves as a counterbalance to the expectations that are implicit in 'provide early and accurate warning.'

3-80. **Provide early and accurate warning**. The security force provides early warning by detecting the enemy force quickly and reporting information accurately to the main body commander. The security force operates at varying distances from the main body based on mission variables of METT-TC (I). The earlier the security force detects the enemy and answers PIRs, the more time the main body can assess the changing situation and react. By operating further from the protected force, area, or facility, aviation security operations

can provide earlier warning than typical ground security operations. Additionally, aviation's ability for rapid displacement over terrain can increase the reliability of communications.

3-81. **Provide reaction time and maneuver space**. Aviation's ability to provide early and accurate warning translates to more reaction time and maneuver space for the main body. Aviation attack and reconnaissance assets can synchronize and employ a significant amount of direct and indirect firepower to resist enemy forces long enough for the main body to respond effectively to likely enemy actions. The supported commander determines the amount of time and space required from information provided by the IPOE process and mission variables of METT-TC (I). This includes providing time to the protected force to allow them to execute decision point to maximize firepower at their decisive point(s). Aviation security forces can facilitate the convergence of multidomain effects against an advancing enemy.

3-82. **Perform continuous reconnaissance**. Implicit in this fundamental is security forces answering brigade or division PIRs to facilitate decisions allowing the ground commander to achieve relative advantage. Therefore, the aviation security force aggressively and continuously seeks the enemy and reconnoiters key terrain.

SCREEN

3-83. A *screen* is a type of security operation that primarily provides early warning to the protected force (ADP 3-90). While the screen is not intended to stop all enemy from passing through, it is imperative that aviation units allow no enemy to pass through the screen undetected and unreported.

3-84. The CAB can perform a screen autonomously consisting of a single UAS up to the entire ACS or AB. A key consideration in selecting the screening location for aviation forces is the range of any supporting fires. Ideally the aviation unit conducts their screen within range of friendly artillery assets. However, mission variables often require aviation operations beyond the range of division's lethal fires. In such missions, CAB and division staffs must carefully plan against the reduction of available fires and employ appropriate measures and tactics to facilitate the survivability of aviation forces. Aviation and higher headquarters planners must weigh the cost versus the benefit of using manned versus unmanned systems to conduct flank or rear screens when considering the best use of ACS/AB resources.

3-85. When planning a screen with aviation assets, planners should create significant depth to the screening operation. Aviation assets are highly mobile and having the room to maneuver facilitates survivability and mission success. OE and mission variables drive the required depth of the screen; in general, aviation operations require significantly more space than their ground force counterparts. Aviation planners employ multiple aerial observation posts throughout the depth of the screen, both for manned and unmanned assets. Creating multiple observation posts in depth permits controlled movement of aviation assets throughout the screen, maximizes aviation survivability, facilitates maintaining enemy contact, maximizes UAS to AH-64 remote engagements (MUM-T), and best supports reconnaissance handovers between all Scout elements, both air and ground.

3-86. When planned properly, the ACS or AB can attack, defend, bypass, and delay the enemy force. The ACS has a unique ability to mass fires during screen operations. A single UAS can conduct continuous call for fire missions while maintaining contact with the enemy, prior to the enemy reaching the friendly force. AH-64 Apache helicopters augment the screen with an array of sensors and additional firepower, thereby greatly increasing lethality as opposed to a ground only screen.

3-87. Critical tasks for an aviation security force conducting screens include the following:

- Maintains continuous observation of all avenues of approach that affect the main body's mission.
- Conducts counter reconnaissance to destroy or disrupt all enemy reconnaissance elements according to engagement criteria. Allows no enemy ground element to pass through the screen undetected and unreported.
- Locates and identifies the lead elements that indicate the enemy's main attack, as prescribed in the enemy's order of battle based upon the IPOE (when facing an echeloned enemy force).
- While displacing, determines the direction of enemy movement, maintains contact, and reports threat activities.
- Maintains contact with the protected force and other forces operating on its flank.

- Detects and reports all enemy elements attempting to pass through the screen, both ground and aerial, and provides the protected force commander early warning of enemy activities.
- Maintains contact with enemy forces and reports activity in the assigned area.

GUARD

3-88. *Guard* is a type of security operation conducted to protect the main body by fighting to gain time while preventing enemy ground observation of and direct fire against the main body (ADP 3-90). Aviation units cannot conduct a guard operation autonomously but can support the ground unit conducting the guard. Detailed planning and integration are critical between the guard force and the aviation unit. Aviation units supporting a guard operation accomplish the necessary tasks associated with screen, zone reconnaissance, and attack missions.

3-89. When supporting guard operations, aviation units often perform a critical role in identifying and engaging enemy elements. The integration of aviation is an operational imperative, and these two entities must be employed as a combined arms element to maximize the strengths of each system. Deliberate and accurate mission analysis is critical to creating a feasible plan. Prior to execution, crews conducting the guard must have assigned high payoff targets and a well-developed scheme of maneuver. Planners should seek to employ aviation assets in depth against the enemy and from positions of advantage and surprise. Successful engagements with aviation and fires assets (both lethal and non-lethal) against enemy formations in depth can disrupt the enemy into manageable sizes prior to their reaching friendly ground forces within the guard.

3-90. Based on the secured main body's scheme of maneuver, aviation can reconnoiter the area between the guard or cover force and the main body, assist in maintaining contact between the security force and the main body, and protect the flank guard force to allow it to concentrate on its security or battle position tasks. When supporting a moving force, aviation units reconnoiter along the flanks of advancing ground units by conducting any type of reconnaissance to successive screen areas, observation posts, or battle positions.

COVER

3-91. A covering force is an independently operating, self-contained force conducting the cover mission. A *cover* is a type of security operation done independent of the main body to protect them by fighting to gain time while preventing enemy ground observation of and direct fire against the main body (ADP 3-90). Aviation units supporting a cover can expect to operate in the same manner as supporting the guard. Unique considerations are the distance the covering force operates away from the main body. As with any aviation operation, careful and deliberate planning must be completed to ensure successful aviation support.

AREA SECURITY

3-92. *Area security* is a type of security operation conducted to protect friendly forces, lines of communications, and activities within a specific area (ADP 3-90). Area security preserves a commander's freedom to move reserves, position fire support means, provide for C2, conduct sustainment activities, and consolidate gains. Area security degrades the enemy's ability to affect friendly actions in a specific area by denying the enemy's use of an area for its own purposes.

3-93. The CAB is uniquely suited to perform an array of area security operations across the battlefield. Examples are—

- Area, route, or zone reconnaissance.
- Screen.
- Offensive and defensive tasks (within capabilities).
- Route and convoy security, to include aerial.
- FARP/AFAR/tactical assembly area (TAA) security.
- Security for high-value assets.
- Maintaining an observable presence.
- LZ and PZ security.

LOCAL SECURITY

3-94. *Local security* is the low-level security activities conducted near a unit to prevent surprise by the enemy (FM 3-98). Put another way, local security is what units inherently do to protect themselves. Aviation crews must plan for and employ local security throughout all phases of the operation. Based on OE and mission variables, commanders of aviation units may elect to employ larger formations for the purpose of augmenting local security. Planners and commanders cannot forget about protecting and incorporating UAS into the local security plan. An example of local security is employing UAS for TAA, flight route, and OP and battle position security.

SECTION V – AIR ASSAULT

3-95. Air assaults extend the tactical and operational reach of the combined arms team by overcoming the effects of terrain, achieving surprise, and isolating, dislocating, or destroying enemy forces by rapidly massing combat power at the maneuver commander's time and place of choice. (Refer to FM 3-99 for detailed air assault information.)

3-96. Army Aviation conducts air assaults in support of offensive, defensive, and stability operations throughout the depth and breadth of the AO. Air assaults are combined arms operations conducted to gain a positional advantage, envelop, or turn enemy forces that may or may not be able to oppose the operation. Assault units may be tasked with air assaulting a TCF to counter Level III enemy penetrations of the main battle area. (For more information on the TCF, refer to JP 3-10.)

3-97. The AATF is the entire combined arms team conducting the air assault. The AATF commander (normally the ground maneuver brigade or battalion commander whose subordinate echelon constitutes the main combat force) commands the combined arms team through all phases of the air assault (FM 3-99). When task-organized with ground maneuver forces and fires, an Army Aviation battalion or brigade commander can operate as the AATF commander. The aviation task force commander (or a designated subordinate leader for air assaults below battalion level) serves as the air mission commander and commands the aviation forces through all phases of the air assault and follow-on ground tactical plan. The ground tactical commander is the commander of the largest ground maneuver force inserted during the air assault and assumes command of the ground tactical force in the LZ and upon initiation of the ground tactical plan.

3-98. Task organization of the aviation task force supporting the AATF is based on mission variables but at a minimum always includes an assault element and an attack or reconnaissance element as the foundational aviation maneuver capability.

3-99. The assault element may be made up of assault helicopters, heavy lift helicopters, or a combination of both. Aviation assault and heavy lift units transport ground maneuver forces and equipment from secure or permissive PZs to either unsecure or secure LZs in the objective area. Based on mission variables and the AATF commander's intent, LZs may be directly on, very near, or offset from the objective. The closer the LZ is to the objective, the greater the ability to rapidly mass combat power and potential to achieve surprise. Offset LZs are chosen when no suitable LZs are available, to enhance survivability during the landing phase if the threat on the objective is high, or when the AATF commander desires to infiltrate into the objective. However, significant offset distances may reduce the element of surprise, require a larger ground tactical force, and/or allow the enemy early warning and freedom to maneuver to gain relative advantages. The AATF commander's intent; availability, size, and suitability of LZs; size, disposition, and capabilities of the enemy; and size and capabilities of the AATF drive the determination of LZ locations.

3-100. Army Aviation attack or reconnaissance units utilizing MUM-T conduct a range of tactical and enabling tasks in support of the air assault, to include air route reconnaissance, LZ/PZ reconnaissance, attacks prior to and during the landing phase, attacks to set conditions prior to the assault, and attacks, screens, and reconnaissance operations in support of the ground tactical force after landing. The air mission commander maintains C2 of the attack and reconnaissance elements until the ground tactical plan phase, at which point they typically become DS or OPCON to the ground tactical force commander.

3-101. Air assaults are typically deliberately planned operations. They can be conducted in deep areas forward of a unit's zone or sector in linear AOs; in the higher echelon's deep areas between non-linear and non-contiguous AOs; or in the echelon support area to defeat enemy threats that were either bypassed during

offensive operations or that have infiltrated or penetrated the main battle or security areas during defensive or stability operations. Air assaults into the close fight are generally in extremis but may be used to exploit success by reinforcing friendly ground maneuver forces on an objective or to prevent friendly forces from being overrun. Based on mission and operational variables, Army Aviation executes air assaults with elements as small as a team each of assault and attack helicopters up to the aviation brigade level, either as a subordinate member of the combined arms team or as the AATF headquarters when task-organized with ground maneuver forces.

3-102. The amount of time required to plan and prepare an air assault is largely driven by the complexity of the operation, the proficiency level of the ground and aviation forces forming the AATF, and the degree to which habitual relationships allow the use of standardized procedures to reduce planning and preparation times. Planning times can range from as short as 30 minutes for habitual quick reaction force missions up to 96 hours for larger company, battalion, or brigade air assaults in high threat areas. Ultimately, however, air assault planning should be as detailed as time permits and should include the production of written orders. Figures 3-12 to 3-16 (pages 73 and 74) provide examples of air assaults with increasing levels of complexity and planning requirements.

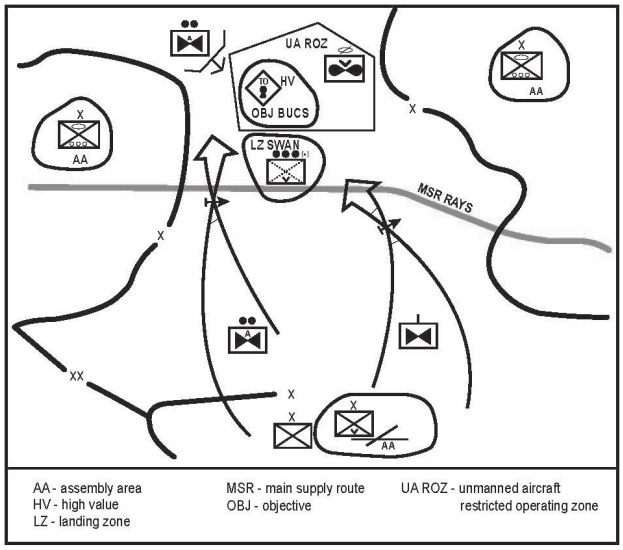

Figure 3–12. Platoon (minus) air assault to seize a small objective

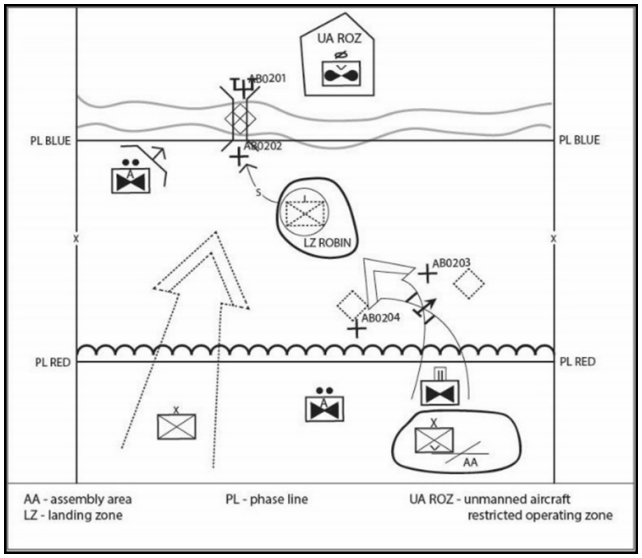

Figure 3–13. Infantry company air assault to seize key terrain in support of a BCT attack

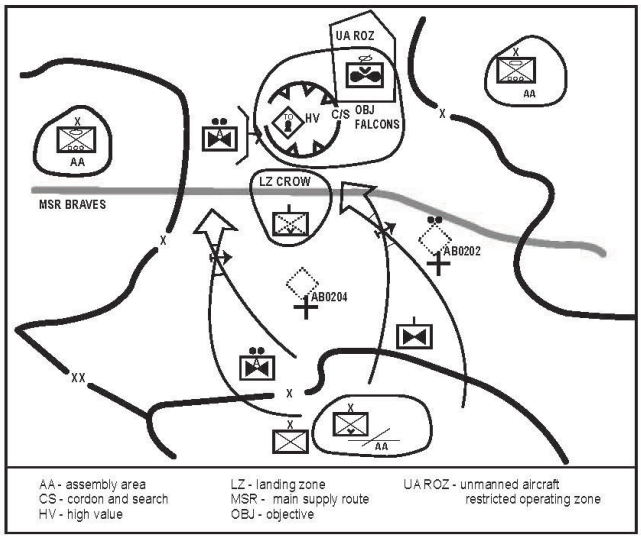

Figure 3–14. Infantry company air assault to seize an object

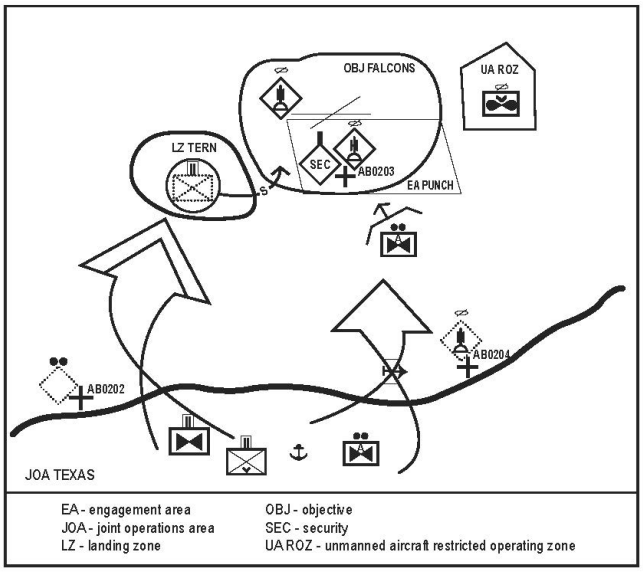

Figure 3–15. Infantry battalion air assault to seize a remote airfield and destroy local enemy security forces

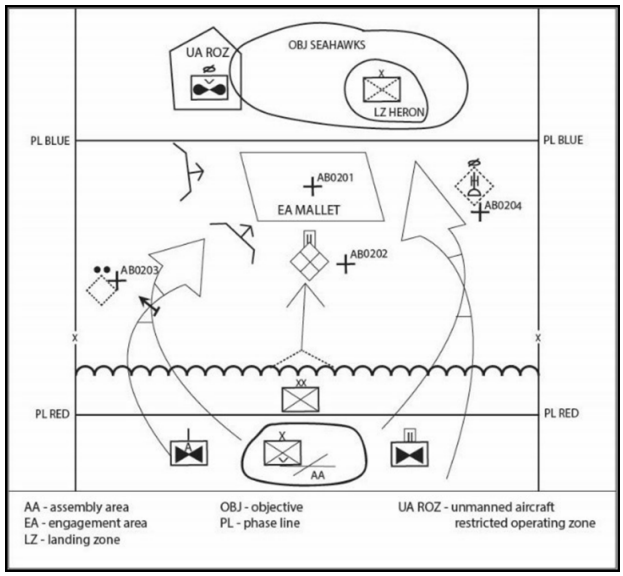

Figure 3–16. Infantry BCT air assault to block enemy forces retrograding

3-103. Although air assault operations can be complex, maintaining continuous friendly and enemy running estimates, using common SOPs, and maintaining continuous liaison and habitual training relationships and continuous target development through reconnaissance and IPOE all increase the agility of the AATF to seize the initiative through reduced time required to plan, prepare, and execute. (Refer to FM 3-99 for detailed planning considerations.) Regardless of how long an organization takes to plan, brief, rehearse, and execute a mission, all air assault operations use the following reverse planning sequence:

- Ground tactical plan.
- Landing plan.
- Air movement plan.
- Loading plan.
- Staging plan.

3-104. The steps of the reverse planning sequence are developed collaboratively between the ground force and aviation forces. The foundation of the operation is the ground tactical plan, from which all others are developed.

3-105. The ground tactical plan accomplishes the tactical mission, such as establish blocking positions, destroy an enemy force, or seize key terrain. The ground tactical force commander's chosen scheme of maneuver drives the rest of the planning process to ensure the ground force arrives at the right place with the right combat power to achieve surprise and overwhelm the enemy force. The AATF is organized with sufficient combat power to seize initial objectives and protect LZs. The required combat power should be delivered to the objective area consistent with maximum aircraft and PZ capacities to take advantage of surprise and shock effect.

3-106. When planning loads, squad integrity should be maintained by chalk and platoon integrity by serial to reduce C2 and span of control challenges during the landing phase and initiation of the ground tactical plan. To perform its mission, an AATF must arrive intact at the LZ. The force must be tailored to provide en route security and protection from the PZ, throughout the entire air route, and at the LZ.

3-107. The AATF is organized with adequate sustainment to accomplish the mission or until designated follow-on or linkup forces arrive. Units that support the air assault operation normally are placed in DS to the AATF to ensure close coordination and continuous, dedicated support throughout an operation.

3-108. Various elements perform specific tasks ensuring the successful execution of an air assault. Attack or reconnaissance units using MUM-T conduct reconnaissance, security, and attacks during all phases of the operation. Indirect and joint fires provide fire support to set the conditions in the objective; suppress enemy air defenses en route and on the objective before, during, and after the air assault; and continue to provide

supporting fires once the ground tactical force is established on the ground. When planning assaults, the AATF commander controls the operation by using air corridors, air routes, primary and alternate LZs, engagement areas, attack by fire positions, screen lines, holding areas, phase lines, target reference points, ACMs, named areas of interest, and target areas of interest. To define the AO, the commander may also designate subordinate unit boundaries and objectives in the designated AO. These control measures allow for decentralized actions and small-unit initiative to the greatest extent possible.

SECTION VI – AIR MOVEMENT

3-109. Air movement operations are a viable means of transport and distribution in support of offensive, defensive, stability, and DSCA, and must be integrated into the division's planning efforts (such as the scheme of sustainment). Loads can be configured internally or externally depending on mission variables and type aircraft available to conduct the air movement operation. Army Aviation platforms should plan to never return from a mission empty but always to seek to backhaul whatever personnel or cargo the ground force commander may require.

3-110. Air movement operations are conducted to reposition units, personnel, supplies, equipment, and other critical combat elements in support of current and/or future operations. Air movement operations allow the ground force commander to control the tempo of operations and meet the enemy force at the time and place of their choosing. Utility and cargo helicopters supplement ground transportation to help sustain continuous offensive and defensive operations and allow the supported commander to overcome difficult terrain and time constraints on operations.

3-111. Assault and GS helicopter units perform air movement on a DS or GS basis. Though air assault operations and air movement are separate missions, the planning sequence used for air assault operations—with modified phases—are applied to an air movement. Army Aviation FW operations require a detailed justification and validation for use and typically involve the air movement of limited critical personnel, equipment, and supplies between intra-theater airfields when deployed.

INTERNAL LOAD OPERATIONS

3-112. Internal load operations are conducted by Army RW and FW aircraft. However, the primary aircraft used for cargo is the CH-47, due to its size, airframe configuration, and lift capabilities. Large-scale air movement operations, like air assaults, require detailed planning and C2 considerations. Most air movements are smaller and highly decentralized requiring as few as two RW or one FW aircraft but can be executed with formations as large as an assault or GS battalion.

3-113. The CH-47 helicopter has an internal cargo handling system which allows for the transport of three 463L pallets or 10 standard warehouse pallets, permitting rapid load and offload of palletized cargo. At the aft end of the aircraft, the rear ramp permits some internal drive-on and drive-off capabilities for light vehicles and trailers. Internally, the CH-47 helicopter can seat 33 passengers with baggage; in an air CASEVAC configuration, it can load 24 litter patients directly to the floor.

3-114. The UH-60 is used mainly for tactical transport of troops, supplies, and equipment. Depending on how the seats are installed, the cargo compartment of the UH-60 can seat up to 11 combat-equipped troops and 2 crew chiefs/door gunners.

3-115. The C-12 and UC-35 are used as intra-theater transport assets to move mission-critical personnel and light cargo. They are capable of self-deploying and transporting required personnel and equipment (aircraft, crewmembers, and maintenance personnel with personal equipment, tools, and limited spare parts) to conduct limited duration operations. These FW units support flights under the control of the Operational Support Airlift Command.

EXTERNAL LOADS

3-116. Typical external loads include bulk supplies; fuel or water blivets; vehicles, trailers, material handling equipment; towed artillery and other weapons systems; and bridging equipment. The supported unit is responsible for preparing, weighing, and rigging external loads. They must avoid overloading vehicles, trailers, pallets, and other containers beyond maximum weights that have been coordinated with the aviation

unit. If the aircraft is unable to lift the load or transport it the required distance, the supported unit must reduce the weight by removing items. The aviation unit makes the final determination of the load's worthiness to fly and determines in advance what portion of the load to carry internally or externally. Special consideration for the size and condition (dust, debris) of the PZ and security of the LZ must be accounted for in the planning process.

3-117. The CH-47 is equipped with a triple cargo-hook system that enables the external transport of vehicles and trailers, towed Howitzers in tandem, and to carry bulky, oversized, or heavier items. The CH-47 is the only Army aircraft capable of transporting the 155-millimeter towed Howitzer and the heavier high-mobility multipurpose wheeled vehicle variants. The triple cargo hooks help to stabilize external loads in flight. Some lighter vehicles and other equipment can be lifted side-by-side. The UH-60 is equipped with a single point cargo-hook system that enables the external transport of small vehicles and bulky, heavy loads that do not easily fit in the cabin of the aircraft.

UNIQUE PLANNING CONSIDERATIONS FOR AIR MOVEMENT

3-118. Air movements are not as complex in planning and execution as an air assault operation, but planning must be detailed enough to meet the commander's end state, maximize the efficient use of air assets, and ensure the safety of the crew and passengers. FM 3-90 lists air movement as one of the methods of a tactical or nontactical troop movement. A typical air movement may be vulnerable to enemy contact as extended distances and limited low threat routes can limit execution options or possibly enable the enemy to identify predictable flight profiles or routes. Refer to ATP 4-48 regarding air movement as a method of aerial delivery for troops, resources, or equipment.

3-119. Air movement operations are especially effective in moving forces and equipment when—

- Ground routes are limited, congested, damaged, or nonexistent.
- Threat activities or obstacles restrict ground movement.
- The supported unit does not have adequate available vehicles.
- Time is critical.
- PZs/LZs are the appropriate size with the requisite security to safely execute the operation.

SECTION VII – AEROMEDICAL EVACUATION

3-120. The Department of Defense Aeromedical Evacuation system consists of an intra-theater MEDEVAC mission (typically performed by dedicated United States Army RW MEDEVAC units) and an inter-theater MEDEVAC mission (typically performed by designated United States Air Force FW assets). Together, they provide the vital linkage of assets required for a successful HSS system.

3-121. *Medical evacuation* (MEDEVAC) is the timely and effective movement of the wounded, injured, or ill to and between MTFs on dedicated and properly marked medical platforms with en route care provided by medical personnel (ATP 4-02.2). The provision of en route care on a medically equipped vehicle greatly enhances the patient's potential for survival and recovery and may reduce long-term disability by maintaining or improving the patient's medical condition. The Army MEDEVAC system is comprised of dedicated, standardized MEDEVAC ambulances (ground and air). These ambulances have been designed, staffed, and equipped to provide en route medical care and are used exclusively to support medical missions.

3-122. Army air ambulance units provide DS and area support within the joint operations area and joint security area to support the overall Army Health System and the Joint Health Service Support plan. At the tactical level, DS or area support assets locate, acquire, treat, and evacuate patients to an appropriate MTF for stabilization, prioritization, and preparation for evacuation to a higher role of medical care (if necessary).

3-123. Army air ambulances are dedicated assets which are distinctly marked according to Geneva Conventions (GC); all occupants are legally classified as noncombatants. Army air ambulance units are medical units and all personnel assigned are considered noncombatants, and legally classified as medical, regardless of MOS/air operations center according to the Law of Armed Conflict and GC. Operating under the principle of distinction and exclusively engaged in humanitarian missions, personnel and aircraft are afforded protections under the Law of Armed Conflict and GC. Assuming all combatants adhere to the Law of Armed Conflict and GC, these special protections provide a reduced level of risk to the patient and crew

as they conduct their missions. (Certain peer threats are unlikely to respect either provision.) The focus of the MEDEVAC mission, coupled with dedicated platforms, permits a rapid response to calls for support. The air ambulance unit operates in a ready alert status to rapidly respond to evacuation missions and is not diverted to perform any other tasks. Although air and ground vehicles are used to transport patients, AE is generally preferred for seriously wounded, injured, and ill personnel because of the speed, range, and flexibility it provides.

3-124. Army AE spans tactical, operational, and strategic objectives in support of the combatant commander's mission. It is essential that all commanders of MEDEVAC assets understand how MEDEVAC systems integrate with each other throughout the AO and across the levels of war. Army MEDEVAC support for each level of war is as follows:

- Tactical:
  - Brigade combat team.
  - Echelons above brigade (divisions and corps).
  - Emergency Class VIII resupply.
  - Emergency movement of medical personnel and equipment.
  - Enemy prisoner of war casualties.
  - Patient movement to and between MTFs and contingency en route patient staging centers in the AO.
- Operational:
  - Multinational.
  - Joint.
  - Class VIII resupply.
  - Department of Defense (DOD) civilians/contractors.
  - Medical personnel/equipment.
  - Military working dogs.
  - Shore-to-ship.
  - Stability tasks.
- Strategic:
  - Host nation.
  - Defense support to civil authorities.
  - Nongovernmental organizations.
  - DOD support to other government agencies.
  - Foreign humanitarian assistance.

3-125. Table 3-1 displays primary tasks and purposes of the MEDEVAC function. For additional information on MEDEVAC and medical regulations, refer to JP 4-02, AR 40-3, and ATP 4-02.2.

Table 3–1. Primary task and purpose of MEDEVAC functions

Primary Task	***Purpose***
Acquire and Locate	Provide a rapid response to acquire wounded, injured, and ill personnel. Clear the battlefield of casualties and facilitate and enhance the tactical commander's freedom of movement and maneuver. This task is performed by the medical evacuation crew of the evacuation platform.
Treat and Stabilize	Maintain or improve the patient's medical condition during transport and provide en route care as required. This task is performed by medical evacuation crewmembers and providers when necessary.
Intratheater Medical Evacuation	Provide rapid evacuation utilizing dedicated assets to the most appropriate role of care. Provide a capability to cross-level patients within the theater hospitals and to transport patients being evacuated out of theater to staging facility prior to departure. This task is performed by the evacuation platforms in the medical company (ground ambulance) and medical company (air ambulance).
Emergency movement of medical personnel, equipment, and supplies	Provide a rapid response for the emergency movement of scarce medical resources throughout an operational environment.

3-126. The CAB supports the intra-theater MEDEVAC mission using organic air ambulance assets that are assigned to the GSAB. The air ambulance company is organized to provide support from four separate

operational locations. These operational locations are typically with the aviation task force, HSS organizations, a BCT, or higher echelons to provide the most appropriate AE support throughout the AO.

3-127. Air ambulance companies are equipped with 15 HH-60 aircraft, capable of supporting 24-hour operations. These companies consist of a company headquarters, an area support MEDEVAC platoon equipped with three HH-60s, and four forward support medical platoons with three aircraft each. The company can operate either from one location or up to five decentralized locations, depending on the supported population, the size of the AO, the locations of MTFs, and the capabilities of supporting elements. An aviation task force is typically task-organized with one FSMP of 3 HH-60s and 21 personnel.

PROVISION OF EN ROUTE CARE

3-128. The provision of en route care on medically equipped aircraft enhances a patient's potential for survival and recovery. Extended distances from a point of injury or ambulance exchange point to the MTF make en route medical care even more critical. Army air ambulances are staffed with highly specialized critical care flight paramedics with advanced critical care training. These flight paramedics are essential for patient stabilization and survival during evacuation.

3-129. Patients may require additional medical professionals to ensure the appropriate level of care is provided. En route critical care nurses or other advanced medical providers may augment the AE crew on a case-by-case basis. Figure 3-17 illustrates en route medical care capabilities between various platforms and how each compare to United States emergency medical services standards of care. Commanders and staffs should understand the varying medical capabilities for patient movement when planning and conducting operations.

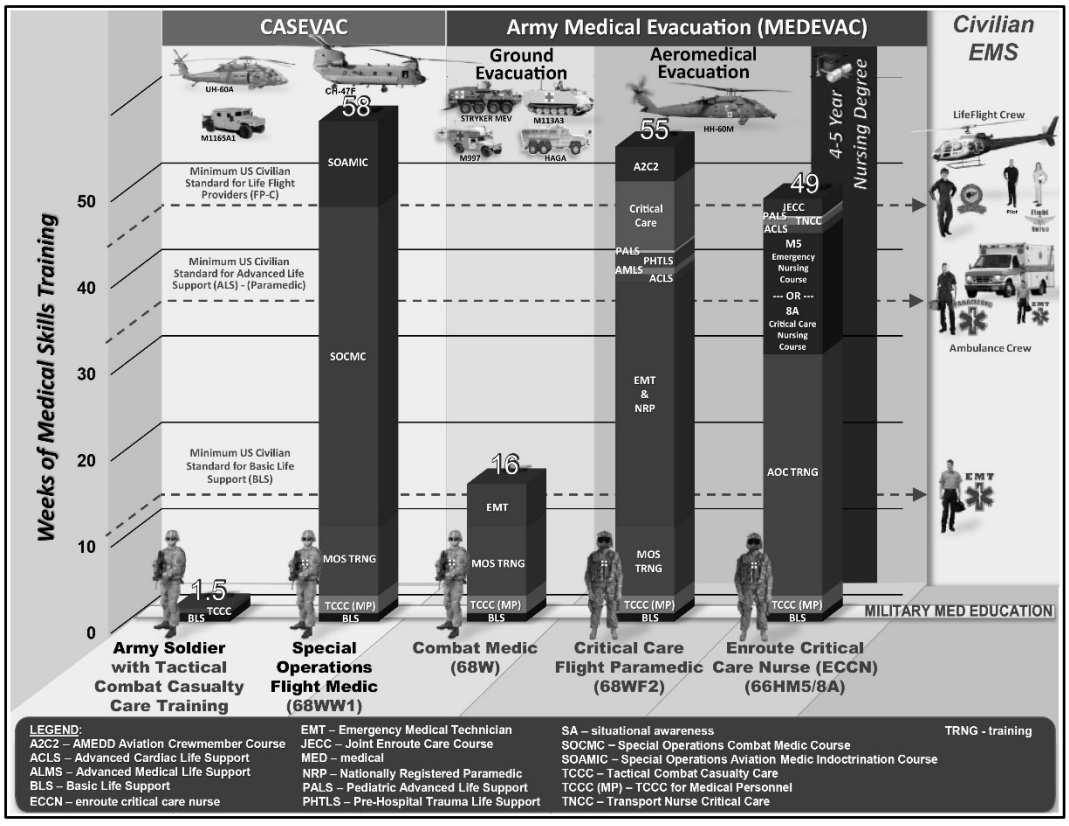

Figure 3–17. Medical skill-level comparison

RECEIPT OF THE EVACUATION PLAN FROM HIGHER

3-130. Theater evacuation policy refers to a command decision indicating the length, in days, of the maximum period of non-effectiveness that patients may be held within the command for treatment. The

Secretary of Defense establishes this policy with advice from the Joint Chiefs of Staff and recommendations from the combatant commander. The senior medical commander may recommend changes in the theater evacuation policy to adjust patient flow.

3-131. The evacuation plan integrates AE to support a regionally focused Army health system support plan. The Army health system plan, which supports the combatant commander and theater engagement plan. All joint, allied, multi-national, and/or host-nation medical assets are assessed in a given operation's Army health system support plan development. Depending on the requirement of the Army health system support plan, Army AE assets may be required to provide support to other services and/or provide area support throughout an AO. To establish evacuation procedures, each level of command issues an evacuation plan through the orders process. Figure 3-18 describes the evacuation orders process. On receipt of the higher headquarters Army health system support plan, the MEDEVAC support plan must be synchronized with Army Aviation planners. The evacuation order assigns—

- Area support mission responsibilities for patient movement and emergency medical resupply. For example, an air ambulance company in an ECAB supporting a division in the support area may be assigned more patient movements between MTFs due to fewer expected casualties away from close operations.
- Joint and multinational force support responsibilities. For example, an air ambulance company could be tasked to provide AE to a Marine expeditionary force.
- Any DS or area support requirements that take an air ambulance asset away from their higher headquarters. For example, a FSMP could be tasked to support a humanitarian mission in a specific region outside the boundaries of the higher command.

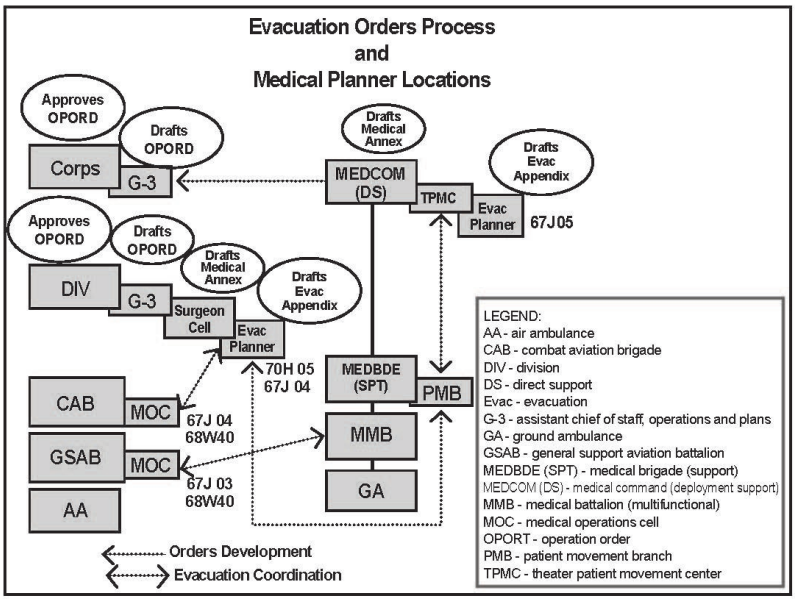

Figure 3–18. Medical evacuation orders process and medical planner locations

AEROMEDICAL EVACUATION MISSION PLANNING

3-132. The evacuation plan for a given AO requires adjustment during different phases of an operation. For example, as forces continuously consolidate gains during armed conflict, the evolving operational environment may dictate a significant change in evacuation coverage priorities. AE operations often require plans which support continuous and often decentralized operations. Such planning considerations include—

- Receipt and synchronization with the MEDEVAC plan from higher headquarters.
- DS and area support as required.
- Mission variables.
- Air ambulance company support for up to five locations during split-based operations.
- Battle rhythm and communications flow for a MEDEVAC mission request.

- Medical operations cell coordination with all medical units for collecting medical information to develop and maintain situational awareness of the MTF and patient regulating requirements.

Note. In a multinational or coalition operation, a patient evacuation coordination cell may be used in lieu of the medical operations cell.

- Fighter management plan to support 24-hour continuous operations at each AE location.
- Rapid communications plan with risk approval authorities identified to ensure appropriate approval prior to mission launch.
- Coordination requirements for security support from escort aircraft.
- Identification and coordination of aerial CASEVAC support when necessary.

3-133. The aviation brigade and GSAB staff, in conjunction with medical planners, must devise an allocation plan that can support all evacuation coverage areas and missions the evacuation order assigns to the higher headquarters. Important considerations include the following points:

- An air ambulance is a low-density asset which must be employed efficiently. AE missions may occur in various situations such as troops engaged in combat, in high population density areas, in areas of famine or disease with high civilian casualties, or in refugee areas.
- In large-scale combat environments, the FSMP evacuates patients from brigade support areas, and ambulance exchange points based on the ground scheme of maneuver and overall threat assessment. It also performs patient transfer missions between MTF or other locations. In permissive environments the FSMP may conduct point of injury missions based on the tactical situation. Commanders must weigh the risk to mission and aircrews with patient movement requirements.
- The headquarters section and the area support MEDEVAC platoon may also be responsible for point of injury missions, when permissible, within their immediate vicinity.

3-134. Although the organizational design of the air ambulance company can support a division AO in certain situations, the effects of the mission variables can dramatically affect AE capability in the AO. Figure 3-19 provides an example of how effects from mission variables can exceed AE capability and require additional assets in the AO.

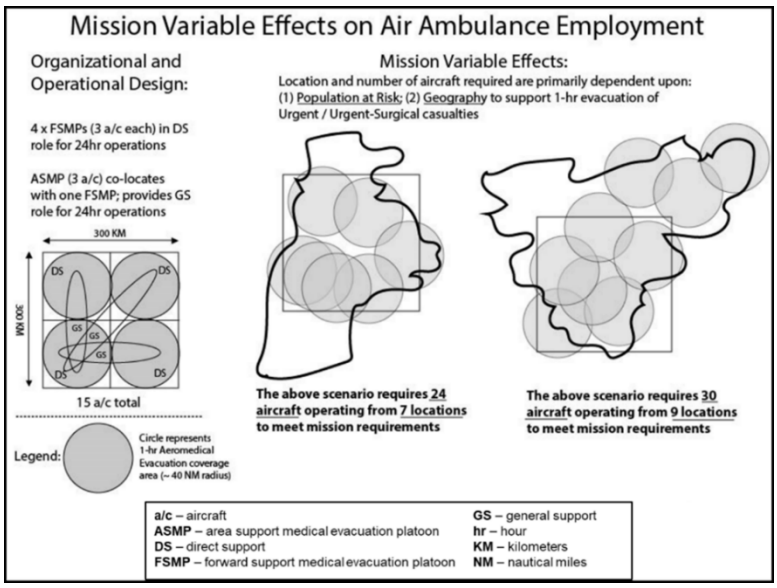

Figure 3-19. Example evacuation zones in a noncontiguous area of operations

3-135. Elements of the mission variables which could complicate AE support to an AO include—

- Mission—
  - Noncontiguous AO.
  - Friendly forces are widely dispersed throughout the AO.

    - Coalition, joint, or other friendly elements who may operate in the AO and require AE.
- Enemy—
    - Enemy air defenses prohibit AE in forward areas.
    - Enemy operations prohibit ground MEDEVAC in certain areas.
- Terrain and weather—
    - Restrictive terrain may lengthen the time for ground MEDEVAC to reach the MTF.
    - Weather patterns may prevent AE between certain locations temporarily.
- Troops and support available—
    - MTFs are widely dispersed throughout the AO.
    - Minimal medical facilities or assets in theater.
- Time available—
    - Aircraft speed or power limitations.
    - Maximum amount of time based on the category of evacuation precedence assigned to patient.
- Civil considerations—
    - Displaced populations and congested areas may disrupt ground evacuation routes.
    - Dense population areas restrict LZ selection.
- Information considerations—
    - Propaganda or misinformation affecting the Law of Armed Conflict/GC protections.
    - Targeting of MEDEVAC aircraft for propaganda.

3-136. The air ambulance company may operate collocated with the GSAB or it may be task-organized and conduct split-based operations to support several aviation task forces. Thorough logistics and support planning is critical when an air ambulance company or FSMP operates apart from the GSAB headquarters. Further, AE units operating apart from their company or battalion headquarters must be ready to continue operations during lapses in communications. Unit SOP, leadership, and command guidance is necessary to compensate for increased risk of operations across widely distributed AOs.

3-137. AE requires coordinated planning and synchronization between aviation units, medical planners, and supported units. Peer threat capabilities may deny AE access to specific areas during large-scale combat operations. AE limits of advance may require the establishment of ambulance exchange points supporting ground-to-air exchange, and subsequent evacuation, of patients prior to these areas. For additional challenges to MEDEVAC regarding large-scale combat operations as well as other operating environment challenges, refer to ATP 4-02.2.

3-138. Although the air ambulance company is part of the Army Aviation organizational structure and C2, AE is a medical mission performed with dedicated air ambulances. The aviation structural alignment, C2, airspace control, logistical support, weather support, fuel support, and security support are examples of advantages the air ambulance company gains by being organizationally aligned under Army Aviation that directly benefit the safe execution of this mission.

3-139. Since time is a crucial factor during AE missions, crew duty cycles are generally executed differently than typical aviation duty cycles. In contrast to a typical 12 to 14 hour aviation mission cycle, continuous AE coverage results in extended operational duty periods, which often exceed 24 hours in length. AE units develop detailed battle rhythms that address unique aircrew resource needs. As planners develop these battle rhythms, supported units should recommend periods of higher- and lower-tempo operations to guide when AE support are most critical.

3-140. An AE aircrew duty cycle begins with basic crew-level mission planning; however, the mission location and time of execution are unknown. During this time, aircrews manage crew schedules and maintain battlefield situational awareness to respond rapidly after receiving an AE request. Units must establish unique fighter management cycles and briefing procedures for remote and/or split-based operations.

3-141. The AE crew must mitigate risks just as other aircrews but must do so without specific advance information. By using the three W method—who, what and why—an AE aircrew can pre-position their assets for faster response time. The aircrew then maintains situational awareness throughout their AO. Once a 9-line MEDEVAC mission request is received, and all critical data is provided to complete the necessary information required, the crew completes planning and responds.

AEROMEDICAL EVACUATION REQUESTS

3-142. Specific procedures, frequencies, and security requirements for transmittal of MEDEVAC requests are delineated through the orders process and made a part of the unit/command SOP. Based on the mission variables, each AO may have a different primary method of MEDEVAC (via ground or air). Sectors with a high ground-to-air or air-to-air threat may rely on ground evacuation assets to move the majority of patients. In other sectors where the ground threat is high and comprised of small arms or explosives, AE operations may be more efficient. It may take a combination of both air and ground evacuation and force protection assets working in concert to mitigate the risk to perform the evacuation.

3-143. Soldiers are evacuated from the point of injury to an ambulance exchange point or MTF by the most expeditious means of MEDEVAC based on their medical condition, assigned evacuation precedence, availability of MEDEVAC platforms, and the threat. It is critical that all commanders with C2 of AE assets understand the categories of casualty evacuation precedence (Role 1 through 3 MTFs) as follows—

- Priority I, Urgent is assigned to emergency cases that should be evacuated as soon as possible and within a maximum of 1 hour to save life, limb, or eyesight; prevent complications of serious illness; and avoid permanent disability.
- Priority IA, Urgent-Surgical is assigned to patients that should be evacuated as soon as possible and within a maximum of 1 hour who must receive far forward surgical intervention to save life, limb, or eyesight and stabilize for further evacuation.
- Priority II, Priority is assigned to sick and wounded personnel requiring prompt medical care. This precedence is used when the individual should be evacuated within 4 hours, if medical condition could deteriorate to such a degree that patient becomes an URGENT precedence, whose requirements for special treatment are not available locally, or who may suffer unnecessary pain or disability.
- Priority III, Routine, is assigned to sick and wounded personnel requiring evacuation but whose condition is not expected to deteriorate significantly. The sick and wounded in this category should be evacuated within 24 hours.
- Priority IV, Convenience, is assigned to patients for whom evacuation by medical vehicle is a matter of medical convenience rather than necessity.

Note. The North Atlantic Treaty Organization no longer recognizes Priority IV, Convenience; however, this category is still included in the United States Army evacuation priorities.

3-144. Evacuation precedence assists the supporting headquarters to determine priorities for committing AE assets. Proper classification of each evacuation mission is especially important since over-classification can lead to reduced evacuation assets available for follow-on missions.

3-145. Procedures for requesting MEDEVAC support must be institutionalized down to the lowest level. The 9-line MEDEVAC request, used for both ground and air, provides a standardized message format that helps expedite the MEDEVAC process. Some multinational partners may require or request additional information on the MEDEVAC request. This additional information may be included into MEDEVAC requests directed to United States MEDEVAC units. An example includes the incorporation of the ‘MIST’ report at the end of the MEDEVAC request, which is the pneumonic of—

- M-Mechanism of injury.
- I-Injury or illness sustained.
- S-Signs and symptoms.
- T-Treatment given.

AUTHORIZATION

3-146. The use of Army AE assets for missions requires both a medical mission approval authority and a launch authority, as specified by the senior commander. Refer to AR 95-1, AR 40-3, and ATP 4-02.2 for additional information regarding use of Army AE assets.

MEDICAL MISSION APPROVAL AUTHORITY

3-147. Medical mission authority begins at the theater-level through the creation of the theater evacuation policy and the medical rules of eligibility documents by appropriate medical officers. Once approved, these documents are published through the orders process and become the foundation for what constitutes a valid medical mission. For AE missions, the medical approval authority is accomplished by verifying the details of the 9-line MEDEVAC request with the policy contained in the theater evacuation policy and/or medical rules of eligibility. Once confirmed that the mission request falls within the established theater guidance, the request becomes an approved medical mission. The validation of the medical necessity to generate a requirement can include—

- Transport of a casualty.
- Patient precedence.
- Requirement for blood or blood products.
- An emergency resupply of medical-related supplies, equipment, or personnel.

URGENT AND URGENT SURGICAL MISSION REQUESTS

3-148. Current DOD policy, based on stability/counterinsurgency environments, dictates the standard completion time for approved 'URGENT' and 'URGENT-SURGICAL' MEDEVAC mission requests as 1 hour, with the time beginning to elapse once the MEDEVAC mission request is received by evacuation elements and stopping when the patient is delivered to the appropriate MTF. This remains a goal of MEDEVAC units but is likely be untenable in large-scale combat operations/environments where the Army may experience mass casualty events on a sustained basis, and threat to aircrews is much higher.

LAUNCH AUTHORITY

3-149. The aviation commander considers the collective risk assessment of the mission and determines final execution or launch authority. The operational aspects related to the collective risk assessment include, but are not limited to—

- Patient care requirement (most important factor).
- The threat or enemy actions.
- Rules of engagement.
- Weather.
- Fighter management.
- Escort requirements.
- Overall tactical situation.

3-150. It is essential for commanders to have documented procedures in place when pre-authorizing AE missions. AE launch approval procedures must delineate between appropriate approval levels for different priorities of AE requests. Brigade commanders are authorized to delegate launch approval authority to subordinate commanders for certain missions according to AR 40-3 and AR 95-1. Commanders may also consider authorization procedures which account for single-ship AE missions or en route linkup with escort or security aircraft, when tactically feasible.

MEDICAL OPERATIONS CELL

3-151. The medical operations cell in the aviation brigade headquarters aids in planning and coordination for air ambulance employment and utilization. The medical operations cell performs the following functions:

- Establishes flight procedures specific to AE missions within the CAB. This may include SAAFRs or corridors as well as procedures for escort aircraft link-up.
- Ensures LOCs to supported units and higher echelons of medical command are available. The medical operations cell also ensures supported units understand AE procedures and capabilities.
- Establishes AE briefing and launch procedures.
- Maintains awareness of the tactical and medical situation. Coordinates with medical regulators at higher echelons to efficiently conduct GS and works in concert with adjacent units.
- Assists the aviation battalion and/or CAB staff in conducting MEDEVAC operations.

SECTION VIII – AERIAL CASUALTY EVACUATION

3-152. Differentiated from AE, *aerial CASEVAC* is the unregulated transport of injured personnel with the use of Army Aviation assets that do not have onboard medical personnel or equipment. Aerial CASEVAC operations may be dedicated, designated, or opportune. During dedicated or designated CASEVAC, augmentation of medical providers and equipment reduces the necessity of supported maneuver forces to provide medical devices and providers or buddy-aid escorts to the aerial CASEVAC asset at the pickup location. Augmentation functions as a force multiplier by not further reducing the maneuver element's personnel, assets, and capabilities.

3-153. When evacuation requirements exceed the capability of available MEDEVAC assets, or other situational requirements dictate, an aerial CASEVAC mission may be flown to transport at risk casualties using non-medical utility and cargo aircraft. For additional information on casualty evacuation, refer to ATP 4-02.13.

3-154. When executing aerial CASEVAC, it is advisable that the least severely injured are evacuated using CASEVAC assets and most severely injured using MEDEVAC assets. Any available medical personnel at the pickup site can assist in determining priority for evacuation. Augmentation with medical personnel may occur utilizing medical assets within the CAB or as a detachment of medical personnel from within the supported unit. Onboard medical personnel can serve in a dedicated or designated capacity. Due to the coordination necessary between the aerial CASEVAC asset and the medical unit providing personnel for en route care, prior planning and training is especially critical.

DEDICATED AERIAL CASUALTY EVACUATION

3-155. Dedicated aerial CASEVAC consists of aircrews and equipment identified and reserved exclusively for the CASEVAC mission. This is the highest level of classification for aerial CASEVAC and is usually a specified task from higher headquarters and should be for a specific period of time. Dedicated aerial CASEVAC may be required for specific operations where AE assets are not assigned or available, or when casualty estimates are expected to overwhelm available AE assets. Dedicated AE crews are not called on to perform any other mission. Dedicated aerial CASEVAC operations and procedures should be similar in conduct of the AE mission and be fully integrated into the patient movement system, to include augmentation with medical providers and equipment if available.

DESIGNATED AERIAL CASUALTY EVACUATION

3-156. Designated aerial CASEVAC assets perform other roles during the operation such as an air assault or air movement but are also specifically tasked with aerial CASEVAC operations as a contingency. This task may come from higher headquarters or may be identified during mission planning. Tasking may be for a specific time period, a specific phase of an operation, or for a specific mission. When designating non-medical assets for aerial CASEVAC requirements, augmentation of medical providers and equipment should be considered, depending on availability. Commanders must identify procedures for receipt of mission as well as launch approval.

3-157. When planning to utilize designated aerial CASEVAC in support of specific operations, such as an air assault, link-up procedures with air or ground MEDEVAC assets should be established and rehearsed. Establishing link-up procedures allows for rapid transfer of urgent casualties to MEDEVAC assets and allow aerial CASEVAC assets to return to provide further support to the operation. Link-up procedures with MEDEVAC assets reduces lengthy evacuations where en route care is limited or unavailable.

OPPORTUNE AERIAL CASUALTY EVACUATION

3-158. Given the opportunity, any available Army utility or cargo aircraft can perform aerial CASEVAC operations. Opportune aerial CASEVAC may be a necessity during operations but represents the lowest level of CASEVAC and is the highest risk of morbidity and disability to the casualty. By planning for MEDEVAC and CASEVAC through all phases of an operation, commanders effectively reduce the necessity for lifts of opportunity.

SECTION IX – COMMAND AND CONTROL SUPPORT

3-159. Army Aviation enhances C2 by providing ground and air commanders the ability to visualize, understand, describe, direct, lead, and assess operations from the location of their choice on the battlefield. Command and control support allows commanders to reposition rapidly to a decisive point on the battlefield, develop the situation, and reach back to resources at the CP or a higher headquarters as required. Additionally, Army Aviation C2 assets provide beyond LOS voice and data communications. C2 aircraft, UAS communication relay package, and ATS all increase a commander's ability to integrate and synchronize operations.

COMMAND, CONTROL, AND COMMUNICATIONS AIRCRAFT

3-160. Command, control, and communications aircraft enhance a commander's ability to execute C2 over extended ranges and complex terrain. By providing aerial command and control and retransmission as directed, the CAC provides air and ground commanders the ability to rapidly traverse and understand the AO. The C2 aircraft gives the commander an enhanced capability to communicate over extended distances by performing C2 while moving, serving as an aerial tactical CP, and providing an early entry CP. The onboard communications linkages allow for continuous contact between the commander and committed forces. These linkages also help maintain situational awareness; issue and receive fragmentary orders with graphics; synchronize fire and maneuver; and extend coverage. With networked-enabled communication systems, commanders and staffs assimilate significantly greater amounts of data faster and with greater clarity. The CAC is organic to the GSAB within the CAB and conducts C2 support either DS or OPCON to the maneuver commander. The aviation unit providing the aircraft must coordinate with the supported unit early to integrate aerial command and control during the planning process. The aircrew of the C2 aircraft should attend orders and rehearsals of the supported unit to fully understand the operational scheme of maneuver and to best integrate the aircraft into the plan.

3-161. **Scheme of maneuver**. C2 support occurs in a CAC aircraft flying in controlled airspace. The most common ACM used is an airborne command and control area ROZ. Coordinated through the operations officer or S-3 (Air), ADAM/BAE, or other air planning element, the airborne command and control area does not conflict with current operations of the supported unit and is in an area that supports the maneuver commander's plan. It may be necessary to plan for multiple airborne command and control areas. During offensive operations, on-order ROZs are planned to allow C2 aircraft to maneuver commensurate with the offensive tempo.

3-162. **Threat**. Aviation battalion operations and intelligence officers must carefully analyze the threat and the impact potential threats may have upon aircraft operating in a ROZ. ROZ operations may fix an aircraft over a piece of terrain for prolonged periods; thus, an accurate threat assessment must inform ROZ location selection. A careful analysis of the ROZ by the aviation unit ensures the ROZ can support the ground maneuver commander's concept.

3-163. **Communications**. ROZ selection maximizes LOS communications with all elements of the ground force, ideally extending the range maneuver forces may cover in an operation. A careful mission variable analysis allows ROZ selection in an area that appropriately balances operational risk with mission requirements.

3-164. **Routes to/from the ROZ**. Flight routes must support the aircraft's transition to the ROZ. These flight routes must be planned carefully, should avoid over flight of friendly artillery units, and should be opened and closed as needed through close coordination with the appropriate airspace element or controlling agency. The detailed planning of air routes for both manned and unmanned platforms, like the procedural control offered by a ROZ, enables success of the combined arms team through detailed planning.

3-165. **Battlefield circulation of key leaders**. The GSAB and the AHB execute missions that facilitate C2 support through leader battlefield circulation designed to promote shared understanding. Battlefield circulation also supports commanders' efforts to inform and influence audiences inside and outside their organizations, such as through Soldier and leader engagements. To meet the circulating leader's intent, the supporting aviation unit needs to closely coordinate with the leader's staff to ensure thorough planning and analysis for each mission.

UNMANNED AIRCRAFT SYSTEM COMMUNICATIONS RELAY PACKAGES

3-166. The Army, as part of a joint network, employs a three-tiered communications system. This network has air, space, and land components provided by individual services, linking the various elements of the joint force to the global information grid. UAS facilitate C2 by extending the network as the commander circulates in the OE. Both UAS communication relay packages enhance C2 by providing extended-range voice communications between CPs, ground, and aviation units.

3-167. Gray Eagle and other UAS provide LOS communications relay as a primary mission; however, only the Gray Eagle can provide over-the-horizon communications relay through satellite communications. Gray Eagle's communications relay package-medium extends tactical communications, to include extending the voice data network. A careful analysis of mission variables allows loiter area selection in an area that provides security and uninterrupted communications.

3-168. Both natural and man-made features limit sensor effectiveness and C2. Flat terrain eases LOS issues while mountainous terrain may reduce unmanned aircraft range and data relay capability. Additionally, inclement weather may degrade communications (voice and video) between UAS and ground maneuver units.

3-169. Operations and intelligence personnel must carefully analyze the threat and its impact on all aircraft, including UAS. Since the Gray Eagle mostly operates above the coordination level for extended periods, medium- and high-altitude air defense artillery, surface-to-air missiles, and MANPADS threats must be identified and avoided. The aviation unit's thorough analysis of the loiter area, and it's ingress/egress routes (see discussion of ROZ routes above), ensures it can support the ground maneuver commander's concept and remain clear of high threat areas.

SECTION X – PERSONNEL RECOVERY

3-170. This section augments the personnel recovery doctrine found in FM 3-50 as it relates to Army Aviation. For further information on personnel recovery operations, the reader should reference this source publication.

3-171. Army PR is the military efforts taken to prepare for and execute the recovery and reintegration of isolated personnel (FM 3-50). PR begins with individual training, ensuring we provide service members with the tools and knowledge to survive, evade, resist, and escape to return with honor. Mission planning addresses PR in the protection warfighting function beginning with PR coordination measures found in paragraph 3.e.8 of the base order (including isolated soldier guidance); additional PR guidance is found in Annex C and Appendix 16 of the operations plan/operations order. At the tactical level, commanders refine PR guidance into specific actions for the Soldier, known as the isolated soldier guidance. PR is both an individual and collective responsibility incorporated into the orders process through the military decision-making process. Units develop, refine, and integrate SOPs and battle drills into mission planning and preparation. This establishes coordination points with other staff and joint elements effectively integrating into the overall PR architecture as well as ensuring commanders are aware of PR requirements.

PERSONNEL RECOVERY METHODS

3-172. It is the responsibility of each commander to recover their personnel. Army Aviation may be asked to assist in externally supported PR missions to recover ground or joint forces. Conversely, an Army Aviation unit may exceed its ability to recovery their own personnel resulting in an externally supported ground or joint PR mission.

3-173. Army PR missions fall under two general categories: contingency planning (unassisted recovery/immediate recovery) and deliberate planning (air assault, air movement, AE, attack, reconnaissance, security, and/or C2 support) to support deliberate recovery and externally supported recovery. For detailed descriptions and definitions of each of the PR methods, refer to FM 3-50.

3-174. Unassisted recovery is highly dependent on individual training, such as survival, evasion, resistance, and escape (SERE), and briefly addressed in aviation mission contingency planning. All isolated personnel

should follow their isolated soldier guidance and be prepared to conduct unassisted recovery as a worst-case scenario. Isolated personnel may have to evade capture and return to the main effort if assets and resources are unavailable to conduct any other type of recovery.

3-175. Immediate recovery is part of mission contingency planning. Tactical orders cover the recovery of personnel with available resources allocated to the mission. Army Aviation mission contingency planning addresses the loss and recovery of assets at various phases of the mission such as the minimum force requirements, bump plan, and downed aircraft recovery. In the event personnel recovery would exceed the ability of contingency planning for the aviation mission, the aviation unit would execute a deliberate recovery, or request an externally supported recovery if native capability were insufficient to ensure a successful deliberate PR mission.

3-176. Deliberate recovery is a PR mission planned and executed by the isolated personnel's command using organic capabilities to the unit. Army Aviation routinely trains this as an air movement or air assault. Either mission package can be tailored to support deliberate recovery.

3-177. External supported recovery is a deliberate recovery facilitated by higher headquarters once organic unit efforts are exhausted. Army Aviation is capable of supporting PR missions for ground, aviation, or joint units.

3-178. BAE personnel ensure aviation asset integration into the BCT PR plan. While detailed PR mission planning cannot be conducted prior to any isolating event, contingency planning and rehearsals decrease reaction time required for recovery force activation. Aviation provides organic lethal fires through manned and unmanned armed aircraft. When aerial security is required, manned aircraft are the primary selection due to their rapid response to the developing scenario. Lift and assault aircraft provide transportation to recovery force personnel, insertion of support equipment during denied landing events, medical support at the point of recovery through the transportation of the isolated personnel, and extraction capability for unit personnel involved in recovery efforts.

PERSONNEL RECOVERY OFFICER/UNIT PERSONNEL RECOVERY REPRESENTATIVE

3-179. Commanders have the legal, moral, and ethical responsibility of recovering their personnel. The personnel recovery officer or the personnel recovery non-commissioned officer assist the commander ensuring the proper individual and collective training of the unit.

3-180. Army aircrew members are generally at a higher risk of isolation due to the nature of their mission. Aircrew members are provided advanced SERE training and survival equipment to increase the knowledge, skills, and means to proactively contribute to their own evasion and recovery. Training is a key element of preparation and mission contingency planning.

3-181. Every member of the aviation staff has a role during PR operations, which requires staff training to hone these skills. The duties and responsibilities of each staff member during an isolating event are documented in the unit's PR SOP.

3-182. All echelons above battalion have trained PR specialists who are assigned as PR officers. Commanders at all subordinate echelons assign a PR representative. The PR representative serves as the unit's PR program manager to ensure all PR tasks are planned, coordinated, and completed. The PR representative liaises with the brigade PR officer and other PR organizations and acts as the point of contact and fusion point for PR matters at their respective levels.

3-183. PR officer duties fall into four broad categories: advisor to the commander, point of contact for PR efforts among the staff, staff coordinator for PR activities, and PR trainer. At battalion level and lower, the PR representative integrates guidance from higher command into plans and unit SOPs (specified details of recovery plans must be handled at the appropriate classification to protect both the recovery force and the isolated personnel). Additionally, during a PR incident the PR representative conducts horizontal and vertical coordination with the personnel recovery coordination cell or section, adjacent, and subordinate units. Depending on the echelon, the PR officer or representative performs these duties as follows:

- At battalion and brigade level, they—
  - Ensure PR is integrated into the unit training plan and SOP.

- Ensure the PR program complies with all Army and Joint regulations and requirements.
- Ensure sufficient PR equipment is available to the unit.
- Provide PR training to all assigned, attached, and external supporting personnel.
- Include PR responsibilities in unit pre-mission planning and execution.
- Establish PR staff capabilities and assign primary responsibilities in the CP as the focal point for the commander and staff.
- Establish isolated personnel reporting requirements in the brigade and subordinate information management systems.
- Recommend task organization and mission assignment to subordinate elements.
- Collect and process information developed by the joint personnel recovery center or other PR centers.
- Advise the commander on steps to ready subordinate units for PR missions.
- Synchronize and integrates all required assets for PR activities.
- Assist subordinate staffs and commanders in the development of their specific echelon's PR system.
- Support joint PR operations, if directed.

- At company, troop, or below level, they—
  - Develop guidance for isolated personnel or evasion plans of action for every member of the unit.
  - Identify shortfalls in PR capabilities during troop leading procedures and request required support.
  - Identify information requirements for potential PR operations.
  - Evaluate each tactical situation and plan accordingly.
  - Assess the unit's ability to complete the PR tasks.

SECTION XI – AERIAL-DELIVERED MINE OPERATIONS

3-184. Aerial-delivered mines (Volcano) support offensive or defensive operations by emplacing minefields under varied conditions; reinforcing existing obstacles; closing lanes, gaps, and defilades; protecting flanks; and denying probable enemy air defense, artillery, or other projected sites. Aerial-delivered minefields may also be employed for flank protection of advancing forces and when conducting aviation and ground unit flank guard or screen missions.

3-185. The ground commander integrates obstacles into the scheme of maneuver to shape the AO or develop the engagement area. The ground commander may rely on the AHB to employ air volcanoes in support of the ground scheme of maneuver, which may require the AHB to travel extended distances to emplace a minefield.

3-186. When emplaced, the minefield seeks the following effects on the enemy:

- Disrupt. With low lethality and density, the commander's intent is to confuse enemy formations with near randomness or denial of high-speed roads, bridge approaches, or masking terrain.
- Fix. These minefields are placed to permit synchronized ground force fires once encountered.
- Turn. Density and lethality are sufficient to influence the maneuver of enemy formations in another direction.
- Block. Density and lethality are sufficient to deny enemy use of terrain when emplaced with other natural and man-made obstacles.

3-187. Aerial delivered mine operations can be high risk. Deliberate planning to integrate Volcano/mine fields into the overall ground scheme of maneuver is necessary in order to provide desired effects while balancing risk to aircrews. Hasty employment, without significant risk mitigation factors should be avoided.

SECTION XII – COUNTER-AIR CONSIDERATIONS

3-188. *Counter-air* is a theater mission that integrates offensive and defensive operations to attain and maintain a desired degree of control of the air and protection by neutralizing or destroying enemy aircraft and missiles, both before and after launch (JP 3-01). The counter-air mission integrates offensive counter-air

(OCA) and defensive counter-air (DCA) operations to attain and maintain the JFC's desired degrees of control. These operations may include the use of Army manned or unmanned aircraft as well as precision fires, artillery, ground forces, special operations, space/cyberspace operations, EW, and other capabilities to create the desired lethal and/or nonlethal effects. For more information on counter-air operations, refer to JP 3-01.

3-189. The goal of OCA operations is to prevent or disrupt the launch of enemy aircraft and missiles by engaging them and/or their overall supporting infrastructure prior to employment. OCA includes four operations:

- Attack operations. OCA attack operations include offensive action by any part of the joint force in support of the OCA mission against targets which contribute to the enemy's air and missile capabilities.
- Suppression of enemy air defense. Activity that neutralizes, destroys, or degrades surface-based enemy air defense systems by destructive and/or disruptive means.
- Fighter escort. Fighter escort provides dedicated protection sorties by air-to-air capable fighters in support of other operations.
- Fighter sweep. Fighter sweep is an offensive mission by fighter aircraft to seek out and destroy enemy aircraft or targets of opportunity in a designated area.

3-190. DCA is all defensive measures within the theater designed to neutralize or destroy enemy forces attempting to penetrate or attack through friendly airspace. DCA encompasses direct (active and passive) defensive actions taken to destroy, nullify, or reduce the effectiveness of hostile air and missile threats against friendly forces and assets. The goal of DCA operations, in concert with OCA operations, is to provide an area from which forces can operate while protected from air and missile threats. DCA operations must be integrated and synchronized with OCA operations and all other joint force operations. The area air defense commander, if established by the JFC, is responsible for DCA planning and operations.

MISSION PLANNING

3-191. Critical to any operation is planning; this is no different when considering operations in contested airspace. Mission planning considerations include the following:

3-192. Commanders ensure their crews plan for aerial threats regardless of their assigned missions by—

- Providing security for aircraft conducting deep operations.
- Attacking targets from maximum standoff ranges whenever possible.
- Incorporating terrain and weather into planned maneuver.

OPERATIONS

3-193. Several air combat maneuvering concepts have proven to be successful in the air combat environment. Although these principles originated from FW experiences, they have specific application to helicopter operations as well.

3-194. Seeing the enemy first is the key to survival in an air combat environment. In addition to visual observation, any tool available should be used to "see" or sense the threat. Some of these tools might include the airborne warning and control system or the forward area air defense system, UAS sensors including the Gray Eagle synthetic aperture radar/ground moving target indicator, or AH-64D/E Longbow radar.

LOOKOUT AND OBSERVATION

3-195. Aircrews must be vigilant throughout all operations in their lookout procedures for enemy aerial threats; a successful engagement depends on it. The timely receipt of an attack warning and prompt, accurate communication of the attack to other aircrew members is critical. Friendly forces must be able to quickly recognize the threat based on threat tactics (and thus intent), not just aircraft physical characteristics. The mission briefing should address the required actions if friendly aircraft see the threat first (bypass or immediate engagement). If the threat is bypassed, friendly forces should forward essential elements of information to the next higher headquarters.

3-196. Individual aircrew members should maintain specific lookout sectors from their crew stations. Each aircraft in the formation should also maintain assigned lookout sectors. As much as aircraft cockpit or cabin design permits, the sectors of observation should equal 360 degrees around the aircraft and formation.

3-197. Commanders should analyze the mission variables to determine if other methods of observation should be employed. For example, if an attack from the rear sector is possible, friendly forces may find it necessary to perform "S" turns or conduct frequent check turns to maintain observation in that sector. Utility and cargo aircrew members/door gunners can also help maintain observation to the rear and flanks of their aircraft and the formation. Sectors of observation must also include vertical airspace. Crews should scan areas out to the maximum effective ranges of the expected threat weapon systems. Finally, there is no safety in numbers. Aircrew members must not become complacent and assume that other crew members will detect the threat first. They must maintain a constant visual watch. Multiple sets of eyes scanning the same sectors reduces the chances of threat aircraft approaching a formation undetected.

3-198. Viable lookout techniques include avoiding detection; recognizing and evaluating threats; and being unpredictable.

Avoiding Detection

3-199. If the threat detects friendly aircraft, the friendly aircraft become targets. Therefore, friendly forces must employ proper terrain flight techniques and electronic counter-countermeasures to avoid visual and electronic detection.

Recognizing and Evaluating the Threat

3-200. All aircraft should be considered hostile until positively identified. Aircraft identification based entirely on its physical characteristics is dangerous. Aircrew members must be familiar with the capabilities, weapons, and tactics of all potential threat aircraft. Aircrew members must assess the difference between nonaggressive maneuvering and maneuvering in preparation for attack. The results of this assessment may be the first indication of whether the threat is searching or passing through and if it has detected friendly aircraft. If detected, friendly aircraft must execute the appropriate battle drill and avoid, evade, threaten, or engage the threat as the situation dictates. A drill may not be necessary if detection of the threat is made with sufficient time to make a tactical decision.

Being Unpredictable

3-201. Repetitive patterns by friendly forces increase the threat's potential to gain and maintain an advantage. Aircrew members must always maintain situational awareness and avoid setting patterns in flight routes or response to threat actions. Timely communication between aircrew members enhances coordination and situational awareness and allows for distinct, unpredictable maneuvering.

AIR COMBAT DOCTRINE

3-202. Some basic tenets of air combat doctrine include the following:

- **Avoid**. Unless directed by mission orders, aviation forces maneuver to avoid being observed by threat aircraft. They accomplish this using terrain, cover, concealment, and appropriate movement techniques to avoid disclosing their location. Aircraft survivability equipment should be coupled with active measures such as altering routes of flight when threats are detected beyond visual range.
- **Alert**. The alert call is critical to the survival of the force. It is transmitted by the aircrew who first observes the threat at the moment the threat is observed; they have the highest level of situational awareness. The alert is a brief message that instantly raises the force's awareness to the presence and direction of a threat and of the response to be taken to avoid, evade, threaten, or engage the threat. The alert is a command to act.
- **Evade**. If time and maneuver space permit, friendly RW aircraft should use terrain flight environments to evade the threat. This action should be used to the advantage of the friendly force to avoid engagement. High-performance aircraft encounter problems maintaining sight of slow moving friendly helicopters as their dive-angle steepens. Crews may also consider landing their aircraft if space permits and they believe they have not been detected. However, friendly aircraft

should not attempt to evade if maneuver space or aircraft power is inadequate, or if evading results in a tail chase.

- **Threaten**. If the threat initiates aggressive action and avoidance or evasion is not an option, friendly aircraft should execute appropriate battle drills to orient weapons on the threat. The threat may break off and avoid engagement at the appearance of a well-coordinated, formidable defense.
- **Engage**. If avoidance, evasion, or threatening proves unsuccessful, friendly aircraft must act immediately to engage and neutralize the threat

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Chapter 4
Army Aviation Sustainment

SECTION I – OVERVIEW

4-1. *Sustainment* is the provision of logistics, personnel services, and health service support necessary to maintain operations until successful mission accomplishment (ADP 4-0). Army Aviation sustainment is based on an integrated process (for example people, systems, materiel, health services, and other support) linking sustainment to operations. This chapter addresses aviation sustainment interdependencies and how Army Aviation relies on and supports the sustainment warfighting function. It focuses on the aviation specific details in two of the four elements of sustainment—logistics and health service support—and how they impact aviation operations.

4-2. Effective sustainment operations allow aviation commanders to preserve and apply combat power essential to retaining and exploiting the initiative. For this reason, sustainment must be planned and synchronized at every level of the operation and cannot be an afterthought. During large-scale combat operations, sustainers must provide a reliable, agile, and responsive sustainment capability that enables rapid power projection and independent maneuver from the strategic support area to the deep maneuver area. Commanders at all levels see the OE, anticipate requirements in time and space, understand what is needed, track and deliver what is requested, and make crucial decisions ensuring responsive sustainment.

4-3. Large-scale combat operations heavily tax aviation sustainment networks but also provide the opportunity for aviation sustainment operations to significantly contribute to the ground force's endurance, depth, and ability to consolidate gains. Such operations require redundant LOCs, well-trained processes, and commanders and staffs knowledgeable in the sustainment principles—integration, anticipation, responsiveness, simplicity, economy, survivability, continuity, and improvisation. (See ADP 4-0, ATP 3-04.7, and ATP 4-33.)

4-4. Sustaining Army Aviation units in complex environments, across all strategic contexts, requires a logistics network capable of projecting and providing the support and services necessary for extended operations. The elements of logistics most pertinent to aviation operations are maintenance, transportation, supply, field services, and distribution. Maintenance is the main element that preserves the readiness of a unit's aircraft, ground, and support equipment.

SECTION II – MAINTENANCE

4-5. *Maintenance*, as applicable to Army Aviation, is defined by DA PAM 738-751 as the function of keeping aircraft, components and/or modules, assemblies, subassemblies, and repair parts and other aviation equipment in an operational status; restoring the material to a serviceable condition; or updating and upgrading its functional utility through modification and product improvement. Common maintenance functions are to inspect, test, service, adjust, calibrate, install, remove, replace, repair, modernize, modify, overhaul, and rebuild. Maintenance encompasses the Army's two-level (field and sustainment) maintenance policy and doctrine. (See ATP 4-33.)

4-6. Maintenance is necessary for endurance and performed at the tactical through strategic levels of war. For considerations for maintenance planning to remain responsive as large-scale combat operations transition between offense, defense, and stability, refer to ATP 4-33 and ATP 3-04.7. The Army Aviation planning model allowing commanders, leaders, and maintenance personnel to coordinate and plan the personnel and resources required to perform maintenance use the problem, priority, plan, people, parts, time, tools, and training (P5T3) concept. Using the P5T3 concept streamlines maintenance operations and normally saves time and resources. P5T3 added one key step to this process—priority. Whether it is a problem or a project, a priority should be established prior to plan development to identify the level of resources required to accomplish the mission.

4-7. All seven fundamentals of maintenance, as described in ATP 4-33, apply to Army Aviation. They are described below, with aviation considerations for large-scale combat operations in parentheses.

- Planning. Maintenance planning is integrated into all operations through the military decision making process to ensure synchronization and unity of effort. (How aviation units conduct P5T3 when dispersed and on the move.)
- Reporting. Maintenance readiness reporting enables maintenance leaders at all levels to view their own status as well as their subordinates' maintenance status. (How dispersed aviation units report during periods of degraded digital communications, when logistics information systems may not be reliable.)
- Services. Services include all actions necessary for retaining an item in or restoring it to a specified condition. (How aviation commanders and maintenance leaders sequence services and scheduled maintenance in general during high tempo operations.)
- Repair. Maintenance personnel restore equipment to the highest status within their scope. (Aviation crews and maintainers must regain expertise in expedient battlefield repairs, especially for aircraft malfunctioning past the ACM or at a TAA during retrograde operations. This also requires commander dialogue on acceptable risks to personnel with nonstandard repair versus risk to mission if an aircraft must be left behind.)
- Recovery. The actions taken to retrieve or free immobile or inoperative materiel from the point where it was disabled or abandoned. (Similarly, AMCs and ASCs must regain expertise in battlefield recovery, where time is critical and personnel available for security may be limited.)
- Evacuation. The movement of equipment to a maintenance site or from one maintenance site to another based on mission variables or a change in maintenance level required to repair equipment. (Where aviation brigades place their echeloned maintenance recovery sites, and where support organizations such as TASMG are positioned within the operational framework.)
- Disposition. Systematically removing materiel that is uneconomical to repair, damaged beyond repair, obsolete, or destruction of materiel to prevent enemy use. (How aviation commanders define such thresholds, setting realistic expectations for disposition of aircraft or support equipment either damaged beyond repair or requiring pre-emptive destruction.)

4-8. Maintenance drives the tempo of operations, increasing the availability of mission ready, lethal assets to the maneuver commander. Army Aviation maintenance uses quantifiable measures that determines the degree of operational support each aircraft may be able to accomplish. An efficient, properly resourced maintenance program provides the maximum number of aircraft available on a consistent basis for mission support, thus increasing combat power. If the aviation unit is deploying either to multiple operational areas or to a location a great distance from its higher level of maintenance support, then careful consideration must be given to the modularity and redundancy of specialized tools and test kits required to conduct aviation maintenance. For more information on aviation maintenance and key personnel, refer to ATP 3-04.7.

4-9. Commanders and maintenance managers forecast scheduled maintenance by using running estimates on the sum of available aircraft hours per aircraft fleet, referred to as bank time per ATP 3-04.7. Bank time provides the commander with a glance of the unit's operational endurance and determines the maximum combat power a unit can generate. The commander's goal is twofold—to maintain all assigned equipment in a mission-capable status and to regenerate combat power by repairing damaged equipment as quickly and as close to the point of failure as possible. The ability of an aviation unit to perform its wartime mission is numerically represented by its aircraft operational readiness rates and its maintenance efficiency rates. High operational readiness rates are a direct result of an effective and efficient maintenance program and logistical management by commanders, maintenance, and support personnel. An organization is ready when its overall rating and commodity area category levels are consistent with current Army readiness standards in accordance with AR 220-1 and AR 525-30.

4-10. Aviation's measure of effectiveness provides a standard to assess the unit's ability to generate mission ready aircraft in support of the commander's tactical goals and mission. Aviation field maintenance measures of effectiveness have four categories: combat power measures, maintenance metrics, technical supply measures, and core unit measures. Of the four measure of effectiveness, combat power measures quantify a unit's ability to perform its core and directed mission essential tasks. The three combat power measures of operational readiness rates are: ready to launch data, mission-design series bank time, and aircraft recovery

capabilities. These provide tangible information to track and manage the readiness posture of the unit's aircraft. For more information on the measure of effectiveness refer to ATP 3-04.7.

4-11. Fleet bank time in conjunction with operational requirements provide commanders and leaders the ability to forecast scheduled service estimates. However, some mission support requirements may reduce the amount of available assets which can be applied against forecasted operational requirements. Commanders balance necessary synchronization between maintenance capacity (accrued bank time) against forecasted operational requirements (spent bank time) which contributes to decisions of the amount of assets to apply to each mission requirement. Although the established baseline is 50 percent, actual percentages fluctuate due to operational tempo and maintenance management. Forecasted mission requirements may require a higher bank time but risks more aircraft out of the fight at the same time for scheduled maintenance.

4-12. The AMC/AMT manages the battalion/squadron maintenance program, operates a centralized tool room, and performs field-level maintenance and scheduled services. The primary mission of the AMC/AMT is to sustain combat power in support of the battalion/squadron mission. The AMC/AMT conducts phase maintenance, troubleshoots airframe and component malfunctions, performs maintenance and repair actions, removes and replaces aircraft components, and performs maintenance test flights and maintenance operational checks. During large-scale defensive operations, the AMC/AMT must remain mobile and be prepared to move often to provide responsive support. During large-scale offensive operations, the AMC/AMT attempts to rapidly and accurately diagnose aircraft damage or serviceability to repair aircraft at forward locations with forward maintenance teams. When the time and situation allow, forward maintenance teams repair on site rather than evacuate aircraft, to include battle damage assessment and repair. For additional information on battle damage assessment and repair, refer to ATP 3-04.13.

4-13. The ASC provides aviation field maintenance support for manned and unmanned aircraft systems. The ASC is structured to support aviation battalions that do not have an organic maintenance capability. The ASC performs battle damage assessment and repair and maintenance augmentation to aviation battalions when needed. The aviation support company's structure provides it with the capabilities and capacity to perform component repairs not available to the CAB.

FIELD-LEVEL MAINTENANCE

4-14. Field level maintenance is accomplished throughout the CAB by aviation flight companies/troops and aviation maintenance companies/troop within each of the aviation maneuver battalions and aviation support company within the ASB. Field maintenance is the first operation in the Army maintenance system, performed "on system" in a tactical environment using trained personnel, tools, and TMDE. (See ATP 4-33 and AR 750-1 for more information.) Field maintenance is focused on returning a system to an operational status by crewmembers, operators, and institutionally trained maintainers. Field maintenance is not limited to removal and replacement of materiel but also provides adjustment, alignment, services, applying field-level modification work orders, fault/failure diagnoses, battle damage assessment and repair, recovery, corrosion prevention, and common software updates. For additional information regarding field-level maintenance, refer to ATP 4-33, AR 750-1, and DA PAM 750-1.

4-15. Aviation maneuver companies perform scheduled maintenance with assigned maintenance personnel. They also perform unscheduled field maintenance on assigned manned and unmanned aircraft provided they have readily available parts and required tools to perform those maintenance tasks. Aviation maneuver companies are supported by the AMC, which in turn is supported by the ASC.

4-16. In large-scale combat operations, field maintenance assets perform maintenance support missions across a range of military operations. The AMC/AMT is normally task organized into field maintenance teams to provide mobility and flexibility to close operations while repairing or recovering aircraft. These teams may operate independently, with FARP/AFAR personnel, or with other units to improve security posture depending on threat. These teams do not have organic air defense, anti-armor, or indirect fire capabilities. Refer to ATP 3-04.7 for more information on field maintenance teams.

4-17. The ASC is organic to the ASB. The ASC is the only unit staffed and equipped to perform ground recovery of brigade airframes. The ASC contains sets, kits, outfits, and tools that enhance capabilities and capacity to conduct back-shop component repairs not available across the rest of the CAB. The ASC also provides maintenance augmentation to aviation battalions due to high operational tempo or other situations

such as split based maintenance support operations. However, neither the ASC nor any other organization in the CAB can perform sustainment maintenance. Sustainment maintenance personnel handle damaged or inoperable aircraft or components requiring time-consuming repair actions.

SUSTAINMENT-LEVEL MAINTENANCE

4-18. Sustainment-level maintenance is the second operation in the Army maintenance system, characterized by off-system component and/or end item repair in a secure environment using national-level personnel, tools, and TMDE. (See ATP 4-33 and AR 750-1 for more information.) Sustainment-level maintenance is generally performed to accomplish repairs on common/interchangeable type commodity-oriented repairs (return to a national standard), bringing supported items to one standard that provides a consistent and measurable level of reliability. Off-system maintenance consists of overhaul and manufacturing activities designed to return components, modules, assemblies, and end items to the supply system or to units, resulting in extended or improved operational life expectancies. Sustainment-level maintenance includes all actions usually performed by an authorized special repair activity to conduct off-system maintenance. For additional information, refer to ATP 4-33 and AR 750-1.

4-19. Sustainment-level maintenance consists of tasks on airframes or components that cannot be performed by the aviation brigade due to the lack of facilities, tools, technical skills, or authorization. Typically, support is provided by the TASMG, original equipment manufacturers, contract maintenance personnel, or depot organizations. Sustainment-level maintenance is not normally conducted in the close area. Specific sustainment level tasks may be completed provided appropriate personnel, tools, equipment, and authorization are available. Operationally, the TASMG is a fixed-base dedicated theater aviation sustainment/depot (minus) capability that provides 24-hour maintenance support for the deployed aviation maneuver commander. It can perform both field- and sustainment-level maintenance for manned and unmanned aviation systems; battle damage repair; and repair and return of components and end items to support the National Maintenance Program. Additionally, the TASMG can assist with deploying aviation operational units in port operations; see ATP 4-93 and AR 750-1 for more information.

4-20. Sustainment maintenance is performed by DOD civilians and contractors who return equipment to a national standard, after which the equipment is placed back into the overall supply system. The United States Army Materiel Command through the Army Sustainment Command and its subordinate Army field support brigades and Army field support battalions execute contingency sustainment maintenance missions. When a unit sends equipment to a sustainment maintenance organization the owning unit, in most cases, removes the equipment from the property book. Only in rare instances, such as unit reset, is the equipment returned to the unit.

4-21. Depot support is facilitated by the Corpus Christi Army Depot and the Letterkenny Army Depot. Corpus Christi Army Depot is the Army's organic facility for the repair and overhaul of RW aircraft, engines, and components. The Letterkenny Army Depot provides aviation specific system support to include the AH-64 target acquisition designation sight/pilot night vision sensor and aviation ground power unit reset and overhaul. Tobyhanna Army Depot is the organic depot for communication and navigation equipment. Various original equipment manufacturers are commercial [non-organic] depots for components that they manufacture and for which they hold technical data and overhaul instructions.

BATTLE DAMAGE ASSESSMENT AND REPAIR

4-22. Battle damage assessment and repair rapidly restores the minimum essential capabilities necessary to support a specific combat mission or to enable equipment self-recovery, to include downed aircraft recovery team (DART) missions. Aircraft operators/crew chiefs, aircraft maintenance personnel teams, maintenance support teams, contact maintenance teams, and recovery teams may perform battle damage assessment and repair as authorized by the commander. For more information, refer to ATP 3-04.13.

4-23. Aviation support requirements are a function of the total time necessary to recover and perform essential repairs. Depending on the level of repairs required, aircraft maintenance support teams may be sent forward to repair battle-damaged aircraft. Maintenance personnel attempt to make those minimum repairs necessary for the aircraft to continue its mission or to enable it to be flown to a secure location where additional maintenance can be performed. Downed or inoperable aircraft may need to be recovered by ground or air assets for repair operations. In either case, aviation maintenance and aircraft repairs are conducted as

far forward as possible; self-recovery is preferred with aerial and ground recovery methods used as a last resort.

DOWNED AIRCRAFT RECOVERY TEAM

4-24. Aircraft recovery is a pre-planned mission for all units with assigned or OPCON of Army aircraft and requires extensive coordination with supported and supporting units. The intent is to recover aircraft with minimal risk to Soldiers and equipment involved in the operation. Aircraft recoveries generally require a task organized security force. The AMC or ASC performing DARTs do not have organic air defense, anti-armor, or indirect fire capabilities.

4-25. The aircraft-owning battalion/squadron commander retains initial responsibility for DART. The production control officer is the principal maintenance manager and coordinator for AMC DART missions. The team consists of a maintenance test pilot and select personnel who perform assessment, repairs, and recovery of downed aircraft. They are equipped, trained, and rehearsed to accomplish aircraft recovery in various OEs. If the DART operation exceeds the capabilities of the aviation maneuver battalion's AMC, the S-3 coordinates with the ASB to effect recovery of the downed aircraft. ASBs and GSABs are trained and equipped to conduct deliberate aerial recovery of non-flyable aircraft. When required, the brigade operations officer and support operations officer coordinate for external support for the DART through the ground unit assigned to the AO, or other logistics units during ground recovery missions. Refer to ATP 3-04.13 for more information on aircraft recovery.

SUPPLY

4-26. Aviation supply functions are automated and embedded into aircraft maintenance software that feeds into Army logistics information systems. These systems increase combat effectiveness through the efficient management of supplies, equipment, ammunition, maintenance, and rapid reallocation of resources to sustain troops. The aviation brigade's support operations are tied directly to the division sustainment brigade.

4-27. The AMC provides aviation battalion parts support. Assigned supply personnel are responsible for managing the battalion's shop and bench stocks through documented demand and command support justification. Aircraft supply support is a key function that must be managed to ensure parts with projected requirements and demand support are justified for stockage at the brigade-level supply support activity authorized stockage list.

4-28. Shop stock includes items such as sheet metal, electrical wire, fabric, and metal stock, used and stored within a maintenance work area for day-to-day operations. Aviation units must monitor shop stock to prevent inventory from becoming excessive or outdated. Bench stock items include nuts, bolts, cotter keys, washers, resistors, capacitors, light bulbs, sealants, and batteries, and their levels are managed and based predominantly on consumption.

4-29. Commanders of AMCs and FSCs must work together to find the balance of mobility and maintaining unit operational capability. Maintaining supply discipline is critical to ensuring combat power while preserving the agility of the organization. Units are only designed to carry the loads prescribed in supply policy. Ground LOCs are critical to not only distributing aircraft repair parts, but also refueling and rearming aircraft in FARPs/AFARs. Brigade and battalion supply officers and support operations officers must develop flexible plans to distribute all classes of supply to sustain aviation combat power.

4-30. The ASC provides parts support for aircraft and components undergoing repair from supported units through the work-order process. The ASC maintains shop and bench stock lists tailored for their maintenance support mission requirements. Supply support for aviation ground support equipment maintenance and other non-aircraft items is conducted through each battalion's FSC or headquarters support company maintenance platoon.

4-31. The supply support activity within the ASB's distribution company manages the demand supported authorized stockage list. The availability of aircraft repair parts is crucial to the maintenance support mission and ultimately to the sustainment of serviceable aircraft systems and sub-systems.

4-32. Commanders can coordinate with aviation units to deliver essential supplies that are critical to military operations—whether providing security for ground forces using main or alternate supply routes, or by air

using aviation assets. During LSCO, aviation units can be used to service forward operating bases and combat outpost with troops, cargo, and supplies essential to mission accomplishment. Distribution must be closely coordinated and tracked to ensure delivery of essential support.

OPERATIONAL CONTRACT SUPPORT

4-33. Operational contract support is the integration of commercial sector support into military operations. (JP 4-10; ATP 4-10/MCRP 3-40B.6 [MCRP 4-11H]/NTTP 4-09. 1/AFTTP 3-2.41; AR 715-9) This is applicable to Army aviation most notably for maintenance support in permissive environments. There are three types of operational contract support: theater support contract, external support contract, and systems support contract.

- Theater support contracts can range from small, local contracts for a single unit to operational area-wide contracts in support of multiple components of the deployed force. From a contractor management perspective, it is important to note that local national personnel commonly make up the bulk of outside of the continental United States theater support contractor employees. These contracts, often executed under expedited contracting authority, provide goods, services, and minor construction from commercial sources, normally within the AO. Examples of theater support contract are installing security fencing at aviation supply points or constructing temporary hangars or maintenance pads (minor construction).
- External support contracts are awarded by contracting organizations outside of the AO and provide a variety of logistics and other noncombat related services and supply support. Such contracts normally include a mix of United States citizens, host nation, and local national contractor employees. The largest and most commonly known external support contract is the Army's logistic civil augmentation program. It can provide a complete range of logistics services, including supply services (storage, warehousing, distribution) for the nine classes of supply but the Services source the actual commodities. Examples of external support contracts are basic life support requirements (sleeping areas, showers, latrines, dining, laundry), airfield firefighting, or supply services that could expedite aviation Class IX distribution within theater.
- System support contracts are routinely put in place to provide support to newly fielded weapon systems, including aircraft, land combat vehicles, and automated command and control information systems. These centrally funded contracts provide technical, maintenance and, in some cases, Class IX support for a variety of Army weapon and support systems. System support contractor employees, made up mostly of United States citizens, provide support both in garrison and in deployed operations; Army Aviation uses these services frequently in garrison. Example system support contracts are performing maintenance-related services for compliance with safety of flight (SOF) requirements, aircraft modifications, or modification work orders to a fleet of aircraft systems/subsystems.

4-34. Army Service component commands depend heavily on non-organic support from the host nation and commercial sources to open ports, establish initial staging bases, and execute the reception, staging, and onward movement of combat forces. As the operation develops, most uniformed sustainment capabilities will deploy forward to support the brigade, division, and corps headquarters engaged in direct combat, leaving an enormous joint security area dependent on contractors to operate the theater distribution network and provide security and base life support. For additional information on contract support, refer to JP 4-0; JP 4-10, ATP 4-10/MCRP 3-40B.6 (MCRP 4-11H)/NTTP 4-09. 1/AFTTP 3-2.41, AR 700-127, DA PAM 700-127; and AR 715-9.

4-35. Operational contract support can include non servicemembers; these are contractors authorized to accompany the force. These contract employees and specified tiers of subcontractor employees authorized to accompany the force in applicable contingency operations outside the United States are afforded such status through the issuance of a letter of authorization. They include all United States civilians and third-country national employees not normally residing within the operational area whose area includes all United States forces and who are routinely collocated with United States forces (especially in uncertain or hostile environments). Aviation planners must take care not to assume that such letters of authorization are in place during large-scale combat, especially in the initial stages. Rather, commanders must ensure their maintenance personnel are trained to conduct the full breadth of field maintenance tasks in austere and distributed environments. See TC 3-04.71 for more on the aviation maintenance training program.

Note. If an operations plan and/or operational order includes operational contract support, planners and commanders must understand that contractor personnel are not combatants; therefore, it is necessary to keep them out of direct contact with hostile forces as much as practicable.

4-36. In all operations, Army commanders follow Joint Forces Command guidance and all terms and conditions of the applicable contract(s) regarding any restrictions to location and timing of contract performance. Additionally, commanders may impose further restrictions based on anticipated or actual mission variables.

SECTION III – FORWARD ARMING AND REFUELING OPERATIONS

4-37. The intent of a FARP is to maximize agility and endurance to ensure depth is maintained and capabilities for convergence are available to the ground maneuver commander. It allows commanders to extend the range of their aircraft or significantly increase time on station by eliminating the need for aircraft to return to the aviation unit's central base of operations to refuel and rearm. This increases the operational depth and breadth of aviation units to provide maximum support to the ground maneuver commander. Refer to ATP 3-04.17 for more in-depth information on FARP planning considerations and employment.

4-38. As compared to a conventional FARP, an AFAR does not use fixed fuel hoses or specific arming/refueling pads, and it offers a much larger landing area. The aircraft land within the designated area boundaries, Class III and V equipment drive up to the aircraft to be serviced. This reduces the requirement to setup/teardown a FARP; run and stake hundreds of feet of hose across the ground; and gives more flexibility to aircrews for picking a suitable landing area. Like a FARP, a specific AFAR should generally not be used more than once during large-scale combat. Refer to ATP 3-04.17 for more in-depth information on AFAR planning considerations and employment.

FORWARD ARMING AND REFUELING SITE RESPONSIBILITIES

4-39. The battalion S-3, battalion S-4, and FSC commander—the who—all have significant responsibilities for a FARP/AFAR. The S-3 provides the ‘where’, ‘when’, and ‘why’ mission and site selection. The S-4 provides the ‘what’ sustainment requirements. The FSC commander provides the how mission execution.

4-40. The battalion S-3 coordinates FARP/AFAR site selection with the owning area of responsibility headquarters. Once a FARP/AFAR site has been selected, the battalion S-3 coordinates with the battalion S-4 and FSC commander to determine a FARP/AFAR plan. Whenever possible, the S-4 and a representative from the FSC should be incorporated into the initial planning conference for aviation missions to provide input to the warning order. Integrating the FSC into planning efforts early while communicating timelines and expectations fosters efficient air-ground relationships. Additionally, the officer in charge or noncommissioned officer in charge of the FARP/AFAR should contribute to the aviation operational order and air movement brief. This increases synchronization, shared understanding, and ensures fuel and ammunition assets are where they need to be when they need to be there.

4-41. The battalion S-4 determines FARP/AFAR sustainment requirements. Because aviation battalion S-4s are often aviators, their expertise, when paired with the FSC commander's logistics expertise, allows for better analysis. The battalion S-4 translates it into planning factors for the FSC commander and requests resupply through the brigade S-4. The relationship between the S-4 and FSC commander is vital to FARP/AFAR planning, and the two advise each other to improve overall unit efficiency. For instance, an S-4 intuitively understands pilot habits and that an on-call MEDEVAC mission requires additional fuel for daily run-ups; they also are able to estimate the number of turns into a FARP/AFAR during an air assault based off of distance and load. Conversely, through coordination with the FSC commander, the S-4 is able to provide the S-3 with sustainment capabilities and limitations through logistics calculations and running estimates. The S-4 keeps detailed records of estimates and compares them to actual consumption rates to refine future running estimates.

4-42. Within battalions, FSC commanders are responsible for planning, protecting, and executing the FARP/AFAR mission and reporting commodity consumption. FSC commanders assist battalion S-3s in formulating the FARP/AFAR plan and coordinate fuel and ammunition requirements with the battalion S-4.

The FSC commander advises the S-4 on logistics and reports logistics status reports. These critical status reports related to FARP/AFAR operations are fuel on-hand, ammunition on-hand, and the maintenance status of equipment, especially fuel and ammunition distribution assets. When reporting maintenance statuses, the FSC should include the following critical factors affecting aviation grade fuel availability:

- The status of fuel efficiency tests.
- Any fuel asset incapable of consistently meeting aqua-glo standards.
- Total FARP/AFAR point capacity.

4-43. FSC commanders may request additional FARP/AFAR support from the ASB when requirements exceed the FSC's capabilities or capacity. Increased tempo of operations and/or traffic density may also require ATS assets. The FSC coordinates with the safety officer to certify the FARP prior to use. If a safety officer is not available (an expected factor in large-scale combat), the battalion commander designates an appropriately trained individual to certify the FARP according to the checklist in the unit SOP. FARP/AFAR personnel are responsible for providing security to the FARP/AFAR. However, aviation units should coordinate through the division with the maneuver forces responsible for the AO for additional air defense and ground security support as well as to ensure FARPs/AFARs are properly integrated in the ground scheme of maneuver. Refer to ATP 3-04.17 for further information on types of FARPs and AFARs, their capabilities, and utilization.

4-44. The brigade logistics officer coordinates with the sustainment brigade to push bulk Class III and Class V directly to the FARPs/AFARs. The ASB support operations officer monitors the support relationship and provides supplementary pushes, conducts ammunition transfer and holding point operations, and augments with additional FARP/AFAR operation capabilities.

FORWARD ARMING AND REFUELING SITE PLANNING

4-45. FARP/AFAR operations require in-depth planning and coordination, and planners must consider the mission variables when determining FARP/AFAR site selection and support requirements. FARPs/AFARs are located as far forward as possible, but typically remain behind the ACM and outside the range of medium artillery. The intent is to reduce the distance traveled by aircraft, thereby increasing aircraft time on station while simultaneously striking a balance that exposes the FARP to the least possible risk.

4-46. All aviation maneuver battalions have an organic FSC with a distribution platoon designated to perform FARP/AFAR operations. The size of the FARP/AFAR varies with tactical requirements and variables, however the number of refueling points or equipment must be sufficient for sustainment operations. The ASB, AB and ACS are also assigned Class V and armament maintenance personnel within the component repair platoon to provide re-arming and additional armament maintenance capability.

4-47. FARPs may be easily detected by peer threat reconnaissance capabilities. Commanders must consider multiple FARP locations with short-term duration at any given site to remain survivable and operational. FARP/AFAR site selection and mission duration depend on mission variables. Generally, FARPs in vulnerable locations should be in place for as little time as possible with the smallest possible signature.

4-48. FARPs or AFARs are sometimes established within a FARP zone. The FARP zone is an area forward or remote from the AA and usually short of the ACM or objective, which is designated to provide several FARP/AFAR locations that support ongoing attack or air assault operations. The size of the FARP zone is METT-TC (I) dependent and may cover several hundred square kilometers. It is divided into several sectors, each of which is several square kilometers and suitable for supporting one or more FARP/AFAR locations. In desert areas, a FARP zone may be 60 to 70 kilometers long by 20 to 40 kilometers wide. Other areas (such as mountains, jungle, or close compartmented terrain) may require the sector to be widely separated to find enough suitable locations. Figure 4-1, page 101, is a sample FARP zone. One or more sectors may be active at any one time based on mission requirements, threat analysis, and terrain; this information will be provided to the aviation battalions, ATS, and FARP personnel. Aviation's ability to move quickly also requires the FARP/AFAR to be highly mobile to maintain support.

4-49. FARP/AFAR activities are mission dependent. In addition to METT-TC (I) considerations, planners should consider the following when planning a FARP/AFAR in support of close or deep operations:

- Composition of the FARP/AFAR should be austere.
- Security is limited because the FARP/AFAR is emplaced for a very short time.

- FARPs/AFARs should use all possible means to avoid threat observation and engagement.
- A thorough map/imagery reconnaissance and intelligence update must be accomplished for the area.
- Primary, alternate, and contingency FARP/AFAR locations or teams should be considered to enable continuous operations.
- One M978 heavy expanded mobility tactical truck fuel servicing truck typically contains enough fuel to refuel one AC/ACT or one assault helicopter company one time, depending on aircraft configuration.

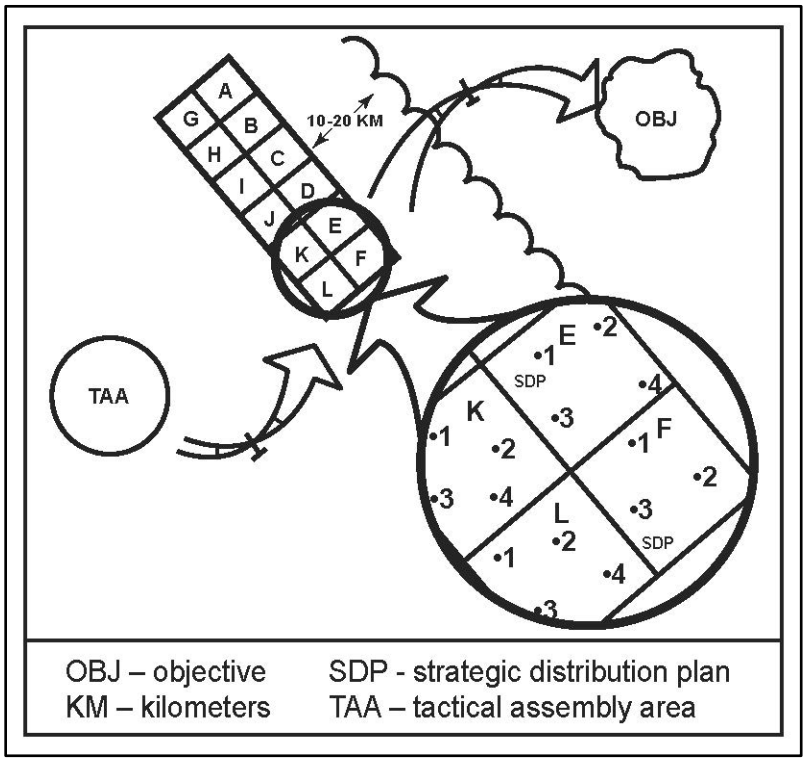

Figure 4–1. Sample forward arming and refueling point zone

4-50. FARPs/AFARs only operate for short periods of time during LSCO, so planners must ensure they have the most current FARP/AFAR locations, timings, and procedures by coordinating with the sustainment staff. Each FARP/AFAR must provide enough fuel, ammunition, or other sustainment support to maintain the operation for the planned duration.

4-51. The sustainment planning cell interacts with the maneuver and sustainment staff at echelon during attack planning to ensure FARPs/AFARs are available and have the required amount of fuel and ammunition to enable the attack. Once the weapons load (based on success criteria as defined in the commander's intent) is confirmed, sustainment planners notify aircraft maintainers and armament Soldiers to modify aircraft pylons and ammunition loads. Sustainment planners also analyze aircraft fuel capabilities based on the weapons load to ensure the staff's FARP/AFAR plans support the operation. Based on weapons, fuel, and performance planning, sustainment planning should reference ATP 3-04.1 and consider the following:

- How much fuel is required to fly to the firing position?
- How much fuel is required to operate in the firing position?
- How much fuel is required to return to the FARP?
- What is the backup plan if the primary FARP is unsuitable?
- How much fuel is left over as a reserve?

4-52. Finally, sustainment planners should develop contingency plans to ensure sustainment is available to the company during operations. Considerations include the following:

- If one FARP/AFAR is destroyed or runs out of fuel, where will the company go to continue the mission?

- Will all aircraft be able to refuel at the same FARP at the same time?
- How long will it take for all aircraft to cycle through the planned FARP(s)?
- What is the minimum (bingo) fuel point for the primary, alternate, and emergency FARPs?

SECTION IV – AVIATION SUPPORT TO SUSTAINMENT OPERATIONS

4-53. As described in ADP 4-0, sustainment supports the four Army strategic roles, and Army Aviation can play a significant role in that sustainment. To prevail in large-scale combat, Army RW and FW assets directly contribute to the freedom of action, prolonged endurance, and extended operational reach required to conduct sustained defensive and offensive operations. Core competencies such as air movement and aerial evacuation most directly impact sustainment support to consolidating gains, restoring combat power and preparing for continued operations to destroy remaining enemy forces. The principles of sustainment aviation that can most directly impact are responsiveness, survivability, and improvisation. For more on these principles, see ADP 4-0.

4-54. Army Aviation support to sustainment operations includes the movement of equipment, material, supplies, and personnel by utility, cargo, and FW assets for operations other than air assault and combat support. Division/Corps versus aviation sustainment throughput are managed and coordinated to ensure overall mission success. Aviation units can be tasked to provide critical support when reduced response times are required and to address high threat or low-availability issues that may impede normal modes of support. Aviation sustainment missions can support inserted scouts or special operations forces in deep operations, main effort maneuver forces during close operations, and the continual consolidation of gains in rear operations. Aviation cargo and utility assets may perform force sustainment as well as support aviation-specific sustainment requirements.

4-55. During aviation support to sustainment operations, commanders must ensure that aviation maintenance support units repair and return aircraft to a serviceable condition as rapidly as possible. These tasks require aviation maintenance organizations to conduct 24-hour, continuous maintenance operations. Aviation maneuver and maintenance commanders must work closely to plan and coordinate aviation equipment repair for return to service as far forward as possible.

4-56. As with other areas of aviation support, commanders must remember that the increased OPTEMPO increases the demand of aviation maintenance assets, which must be prioritized as to which core competencies are most valuable to the Division or Corps at any given phase of an operation. The length and OPTEMPO of sustainment missions may exceed the capacity of aviation maintenance units to return aircraft to a flyable status in a timely manner, which could impact offensive or enabling operation support. Detailed logistics planning and coordination are essential to adequately support sustainment operations, with the scheme of sustainment fully nested with the scheme of maneuver. Aviation commanders must anticipate and forecast all logistical requirements based upon the anticipated OPTEMPO.

4-57. Aviation support to sustainment operations is a command responsibility, at all echelons, critical to the survival of the force and the conduct of combat operations. The Army measures success of sustainment operations by the ability to provide the right supplies and services, at the right time, in the right place, in the right condition and quantity. Synchronizing air-land-maritime sustainment operations provides effective use of scarce resources and optimize the sustainment footprint.

4-58. Army Aviation enhances the Army's operational reach through the unique capabilities of Army aircraft, both manned and unmanned. Aviation mitigates the effects of time and distance with speed and ability to maneuver over difficult terrain. Unmanned systems can provide sustained operations to support the ground maneuver commander's mission requirements because of their efficiency and ability to loiter for extended periods. Aviation assets provide a continuous ability to project firepower and to transport supplies and personnel into rapidly developing large-scale combat operations.

4-59. An analysis of the OE prior to reception, staging, onward movement, and integration should identify aviation locations that allow the greatest freedom of action for commanders. Critical during this analysis is correct matching of personnel with proper equipment and tasks. Commanders should identify optimal areas for aviation to operate that can meet the needs of the ground maneuver commander. Because of the complex nature of Army aircraft and maintenance support functions, infrastructure requirements are critical.

Consideration should be given to areas that can provide such necessities as shelter, electricity, communications, and water for maintenance operations when possible. Analysis should also consider locations that fall outside of the preponderance of enemy surface fires, balanced against distances from expected aviation operations in close and deep areas. Facilities that can be used to store equipment and supplies provide areas to operate supply functions for aircraft and other unit requirements to reduce the logistical wait times and facilitate rapid movement into the AO. Refer to FM 3-0 for more information on reception, staging, onward movement, and integration.

THEATER OPENING AND CLOSING

4-60. Aviation provides Army forces the capability to rapidly deploy personnel, distribute materiel, and retrograde equipment to multiple points of need to and from airports and seaports of debarkation. For sustainment operations, the assistant chief of staff, operations and plans (known as G-3/5/7), Aviation section at the Army Service Component Command, corps, or division levels, is responsible for consolidating, prioritizing, and processing aviation maneuver sustainment requests.

DISTRIBUTION

4-61. Army RW aircraft provide support where terrain denies road delivery or in emergency situations. Airdrop or air delivery may also be arranged; however, air movement is a relatively inefficient means to transport heavy supplies and equipment and should be reserved for the support of major operations in which air movement is essential for success. Air movement is suitable in situations where emergency resupply is vital for mission accomplishment, force sustainment, or rear operations.

BASING

4-62. Aviation can operate from austere field locations and can disperse its assets for protection purposes. In large-scale combat, aviation units will likely disaggregate down to the company level (platoon for MEDEVAC units). When operating from a centralized location, aviation assets require a large area to perform maintenance and operate large numbers of aircraft. Establishing and maintaining airfields, when dispersion is not required, enables the positioning of aviation assets within the range of ground forces. This task becomes critical when airfields are host to a variety of allied military and nongovernmental organizations.

4-63. Potential airfields must be properly analyzed to determine dimension and possible conflicts between UAS and manned military and civilian aviation. Commanders and staffs must also ensure potential airfields meet takeoff and landing requirements; this is especially true for UAS, since unmanned aircraft may face limitations based on runway surfaces, dimensions, or other factors. A letter of agreement may be necessary to establish operational procedures, and requirements for placement of ground equipment. This agreement is made by both the UAS and air traffic control (ATC) units for standardization and airfield operational safety.

4-64. An airfield management element in the aviation brigade's operations section coordinates essential airfield services necessary to support assigned flight crews and aircraft. These services include weather support, firefighting capabilities, airfield lighting, hazardous material/cargo handling, petroleum, oil and lubricant services, and navigational aids.

EXPEDITIONARY CAPABILITY

4-65. The TAOG and AOB are organized and equipped to facilitate early entry contingencies and the establishment of expeditionary airfields in support of Army Aviation operations. These organizations provide expeditionary airfield management and C2 at theater-level airfields and other areas designated by the theater aviation commander.

4-66. The AOB organization and its related ATC assets are deployed at locations requiring the operational management of airfield activities or at locations without an organic ATS element. The AOB may conduct transition operations with a GSAB ATS company as described in the concept of operations.

INTERMEDIATE STAGING BASE

4-67. The intermediate staging base (ISB) is a tailorable, temporary location used for staging forces, sustainment, and/or extraction into and out of an operational area. If tasked to operate the ISB, the Army

should have a primary role in the selection process. The ISB is located inside the theater but outside the AO and combat zone. In cases where the joint force must secure a lodgment to project the force, an ISB may be critical to success.

4-68. The TAOG with one or more attached AOBs may be required to establish an ISB airfield for staging forces. The ISB airfield may be the initial reception and staging facility for Army Aviation movement into the AO. The ISB airfield should include sufficient Army C2, maneuver, sustainment, and joint support to enable force projection into the combat zone.

4-69. The longevity of the ISB varies according to circumstances. The airfield may function as a secure facility for split-based operations during the following capacities or operations:

- Logistics management for support area functions.
- Restricted forward deployment to only those forces necessary to execute the mission (reduces logistical footprint).
- As the tactical situation permits, the JFC can establish a theater staging base within the AO, which may require the redeployment of the TAOG or the deployment of an additional AOB as part of the process.
- In addition to the ISB, the TAOG can establish ATC support at forward operating bases and key helicopter LZs.

TACTICAL AIRFIELD MANAGEMENT

4-70. The management of an airfield must be established as soon as possible to ensure a rapid transition to a safe and operational capability, and if required, an enduring airfield. If there are multiple service customers assigned to an airfield, the JFC designates a service as the senior airfield authority. In some situations, an aviation brigade commander or an aviation task force commander may be designated as the senior airfield authority.

4-71. Airfields increase the responsiveness and versatility of operations such as resupply and troop and equipment movement. The support of special operations forces and interagency elements include all types of aviation missions launched and recovered from Army airfields.

4-72. The air traffic services standardization element of the TAOG provides oversight, technical expertise, and standardization to Army airfields at theater level and quality assurance for training and certification of controllers and ATS maintenance personnel. It develops airspace for restricted areas, transition areas, and control zones. The air traffic services standardization element serves as the primary staff coordinator for ATS matters within the theater. For more information, refer to ATP 3-04.16.

NEGOTIATIONS AND AGREEMENTS

4-73. Airspace coordination is critical to all Army Aviation operations. Operating within the host-nation environment requires agreed upon control measures to ensure safe operation of airspace utilized across a broad spectrum of users.

4-74. Host nation security is a major consideration for aviation operations and airfields where they routinely operate. Aviation operations can require large areas to operate and may require augmentation from host-nation personnel. Use of host-nation resources helps to reduce the aviation sustainment footprint and allows greater freedom of action.

4-75. Logistics support and transportation may be provided by host-nation organizations and facilities. Common classes of supply may be available and obtained from local civilian sources. Items include barrier and construction materials, fuel for vehicles, and some food and medical supplies. Requisition and distribution are coordinated through logistics and liaison channels.

SECTION V – HEALTH SERVICE SUPPORT

4-76. HSS mission components consist of medical treatment, medical evacuation, hospitalization, and medical logistics. The aviation brigades contain minimal HSS elements and are dependent on echelons above brigade units for HSS support except as mentioned below.

MEDICAL TREATMENT

4-77. Aviation medical support is directed by the brigade flight surgeon who coordinates with each of the aviation battalions' flight surgeons. The brigade flight surgeon advises and assists commanders on matters concerning the medical readiness of the command including preventive, curative, and restorative care. The brigade flight surgeon, with subordinate unit flight surgeons, conducts flight physicals for unit personnel. The brigade flight surgeon also determines the requirements for the requisition, procurement, storage, maintenance, distribution, management, and documentation of medical devices and supplies for the unit.

4-78. The brigade flight surgeon, in conjunction with the physician assistant, operates the consolidated Role 1 medical treatment facility, normally located in the brigade support area. Aviation brigades do not possess Role 2 or Role 3 capability and are dependent on supporting organizations.

MEDICAL EVACUATION

4-79. Refer to chapter 3, sections VIII and IX, of this publication and ATP 4-02.2 for information on aeromedical and casualty evacuation.

MEDICAL LOGISTICS

4-80. GS transportation assets are the primary means of transportation for sustainment resupply of Class VIII materiel. The support operations officer coordinates for replenishment and distribution of all medical supplies within the CAB. Usually, theater transportation assets are used to deliver medical supplies from the sustainment area to the supported units. In some instances, air ambulances from the GSAB may be used to transport emergency Class VIII including blood, resupply to requesting units; this is known as ambulance backhaul.

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Chapter 5

Capabilities and Characteristics

SECTION I – AIRCRAFT

5-1. Army Aviation characteristics and depictions are discussed in the following paragraphs.

AH-64 APACHE CHARACTERISTICS

5-2. The AH-64D/E Apache helicopter is a twin-engine, tandem-seat, aerial weapons platform capable of performing attack, movement to contact, reconnaissance, and security operations. The employed combination of sensors and armament systems of the AH-64 allow the ground maneuver commander to gain a position of relative advantage. Figure 5-1 and table 5-1 depict basic characteristics and dimensions of the Apache. The AH-64D/E can mount several types of assemblies to the aircraft mast above the rotor system. The Longbow fire control radar is a battlefield radar system capable of detecting, locating, and classifying ground, airborne, and maritime targets. The fire control radar augments the helicopter's weapon delivery capability using a target acquisition logic, coupled with radar-guided HELLFIRE missiles. The Apache can also mount various assemblies to enable reception of video signals from other platforms, including UAS, and enhanced MUM-T operations. More information can be found in appropriate technical manuals.

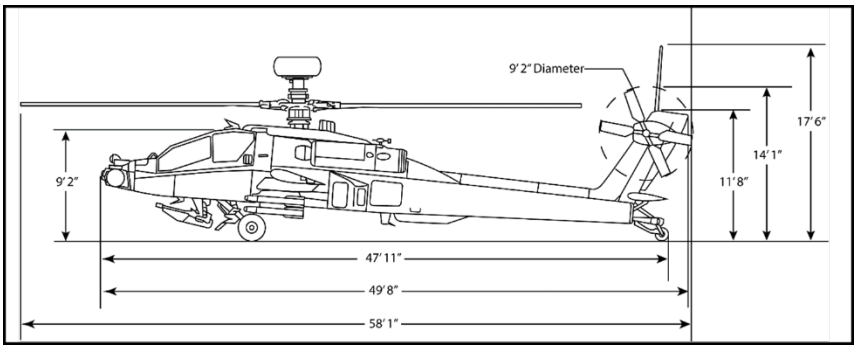

Figure 5–1. AH-64D/E Apache helicopter

Table 5–1. AH-64D/E Apache helicopter characteristics

Specifications:	
Fuselage Length	49 feet 8 inches
Maximum Height	17 feet 6 inches
Fuselage Width	16 feet 4 inches with wing stores
Main Rotor Diameter	48-49 feet
Maximum Gross Weight	23,000 pounds*
Cruise Airspeed	110 to 120 knots*
Max Continuous Airspeed	140 to 145 knots*
Normal Fuel Endurance	~2 Hours (average fuel burn: 150 gallons/hour)
Sensors:	
FCR is capable of detecting, classifying, and prioritizing targets without visual line of sight or in limited visibility, and engaging with RF HELLFIRE missiles. RFI identifies and prioritizes radar emitters based on pre-designated signatures.	

Table 5–1. AH-64D/E Apache helicopter characteristics, cont'd

Navigation Equipment:	
Dual GPS/inertial navigation system, Doppler radar, ADF, AH-64E only: dual VOR/ILS.	
Additional Capabilities:	
Use of IZLID allows ground units to view laser marker through NVG. M-TADS Laser rangefinder designator capable of returning range values from point to aircraft as well as designating targets for autonomous and remote HELLFIRE engagements. Tactical common data link or upper receiver for MUM-T with UAS, United States Air Force/United States Navy/United States Marine Corps aircraft. Link-16 tactical data link for joint networking. Air-to-Air-to-Ground for video sharing and retransmission. Fuel capacity: 376 gallons based on configuration	
* varies with environmental conditions and mission factors ADF-automatic direction finder FCR-fire control radar GPS-global positioning system ILS-instrument landing system IZLID-infrared zoom laser illuminator designator	M-TADS-modernized target acquisition and designation sight NVG-night vision goggle RF-radio frequency RFI-radio frequency interferometer UAS-unmanned aircraft system VOR-very high frequency omnidirectional range

5-3. The AH-64D/E helicopter armament capabilities consist of a 30-millimeter cannon area weapon system, a configurable 2.75-inch aerial rocket system, and a HELLFIRE modular missile system. The 30-millimeter cannon fires the M789 high-explosive, dual-purpose, shaped charge, anti-material/anti-personnel munition; it is extremely effective against thin-skinned targets. HELLFIRE missile and aerial rocket systems can be mounted asymmetrically on the four universal wing store pylons (two on each side of the aircraft) based on mission requirements. Each pylon may carry up to 19 rockets in a rocket launcher or four AGM-114 HELLFIRE missiles on attached missile launchers. The aircraft can employ a variety of rocket and HELLFIRE variants. Also, the AGM-179 joint air ground missile may be carried. Rocket variants include high explosive, flechette, multi-purpose submunition, smoke, and illumination. The aircraft can also employ the AGR-20 advanced precision kill weapon system, for more precise rocket engagements. HELLFIRE missiles may be laser or radar guided; warhead variants include high explosive shaped-charge, fragmentation, or multi-purpose/programmable. Environmental conditions may significantly restrict weapons loads and station time associated with those loads. In addition, the aircraft can attach and carry additional external and internal auxiliary fuel tanks. For more information on Apache armament systems, refer to TC 3-04.3.

UH-60/HH-60 BLACKHAWK CHARACTERISTICS

5-4. The Sikorsky UH-60L/M/V Blackhawk is a twin-engine, dual-seat, utility helicopter. The primary missions of the Blackhawk are air assault, air movement, C2 support, air MEDEVAC (HH-60 variant), and as required, CASEVAC. It is designed to carry 11 combat-loaded air assault troops (seats installed). It can also move light field artillery pieces and supporting stock. Figure 5-2 and table 5-2, page 109, provide the basic description and characteristics of the UH-60L/M/V. More information can be found in appropriate technical manuals.

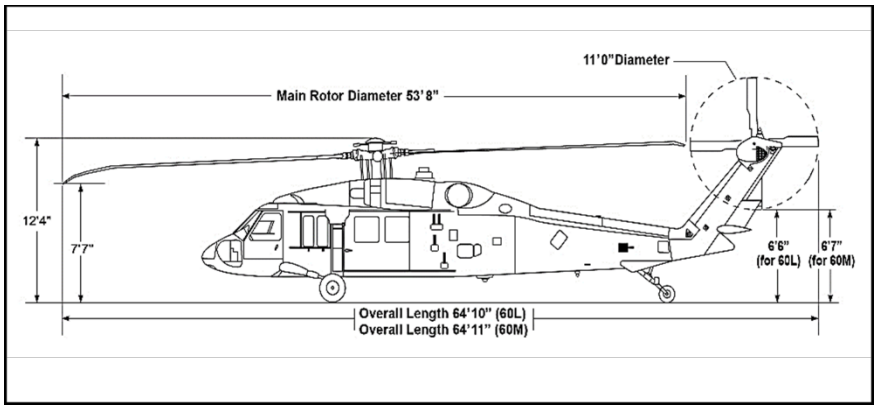

Figure 5–2. UH-60 L/M/V Blackhawk helicopter

Table 5–2. UH-60L/M/V Blackhawk helicopter characteristics

Specifications:	
Fuselage Length	UH-60L/V:50 feet 7-1/2 inches UH-60M: 49 feet 10 inches
Height	12 feet 4 inches at center hub UH-60L/V: 16 feet 10 inches at tail rotor UH-60M: 16 feet 11 inches at tail rotor
Fuselage Width	14 feet 4 inches at the stabilator 21 feet with ESSS and CEFS tank installed
Main Rotor Diameter	53 feet 8 inches
Cabin Floor Dimensions	72 inches wide x 151 inches long
Cabin Door Opening Dimensions	68 inches wide x 54 inches high
Maximum Gross Weight	22,000 pounds*
Maximum Cargo Hook Load	UH-60A: 8,000 pounds*; UH-60L/M/V: 9,000 pounds*
Cruise Airspeed	120 to 145 knots*
Airspeed with External Sling-Loads	120 knots maximum
Maximum Continuous Airspeed	156 knots*
Normal Fuel Endurance	~2 Hours (average burn rate: 150 gallons/hour)
Armament:	
2x M240H (7. 62millimeter machine guns)	
Optics:	
NVG, FLIR (optional)	
Navigation Equipment:	
Doppler/GPS, VOR, TACAN, ADF	
Additional Capabilities:	
Fuel Capacity: 360 gallons (internal) The ESSS allows configuration for extended operations without refueling (5+ hours) (2 x 200-gallon fuel tanks) and ferry and self-deployment flights (4 x 200 gallon fuel tanks). If installed, the enhanced mission command console provides the maneuver commander with an airborne platform supporting six secure frequency modulated radios, one HF radio, two VHF radios, and two UHF radios. Can be configured with the volcano mine-dispensing system; requires 8 hours to install. Capable of inserting and extracting troops with FRIES/SPIES. For HH-60 air ambulance version: Rescue hoist: 600 pounds rescue hoist. Patient capacity: six litter or ambulatory, or a combination.	

Table 5–2. UH-60L/M/V Blackhawk helicopter characteristics, cont'd

Limitations:	
Use of the ESSS for fuel tanks restricts access to the cabin doors for troops and bulky cargo or litters. It also reduces the payload and maximum speed. Cruise speed is decreased when conducting external load operations.	
* varies with environmental conditions and mission factors ADF-automatic direction finder CEFS- crashworthy external fuel system ESSS- external stores support system FLIR- forward-looking infrared FRIES- fast rope insertion and extraction system GPS- global positioning system	HF-high frequency NVG- night vision goggle SPIES-special patrol infiltration and extraction system UHF-ultra high frequency VHF- very high frequency VOR-very high frequency omnidirectional range TACAN-tactical air navigation system

CH-47F CHINOOK CHARACTERISTICS

5-5. The Boeing CH-47F Chinook is a twin-engine, tandem rotor heavy-lift helicopter. Its primary missions are air assault, air movement, mass casualty evacuation, aerial recovery, and aerial resupply across the full spectrum of operations. The versatility of the CH-47 enables rapid repositioning of maneuver forces across the breadth and depth of an AO. Figure 5-3 and table 5-3 depict the basic dimensions and characteristics of the Chinook. More information can be found in the appropriate technical manual.

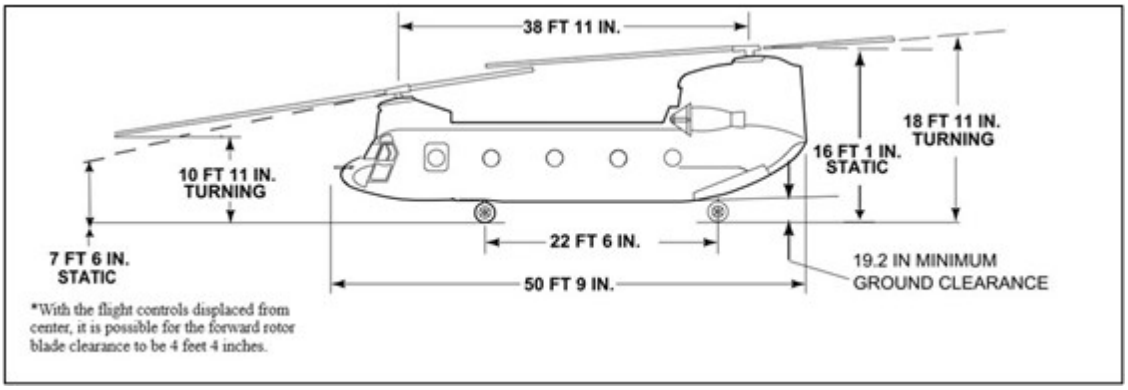

Figure 5–3. CH-47F Block I Chinook helicopter

Table 5–3. CH-47F Block I Chinook helicopter characteristics

Specifications:	
Fuselage Length	50 feet 9 inches
Height	18 feet 11 inches
Fuselage Width	12 feet 5 inches
Main Rotor Diameter	60 feet (single rotor system); 60 x 99 (entire tandem system)
Cargo Compartment	Approximately 1,473.9 cubic feet
Cabin Height	6 feet 6 inches
Floor Space	30 feet 5 inches long by 88 inches with COOLS or 90 inches without COOLS.
Maximum Gross Weight	50,000 pounds*
Max Load for Forward or Aft Hook	17,000 pounds*
Max Tandem Load for Forward and Aft Hooks	25,000 pounds*
Max Load for Center Hook	26,000 pounds*

Table 5–3. CH-47F Block I Chinook helicopter characteristics, cont'd

Specifications:	
Cruise Airspeed	120 to 145 knots*
Max Continuous Airspeed	170 knots*
Airspeed with External Sling-Loads	120 knots maximum
Normal Fuel Endurance	~2.5 to 3 Hours (average burn rate: 330 gallons/hour)
Armament:	
3x M240H 7.62-millimeter machine guns (two cabin-mounted and one ramp-mounted)	
Optics:	
NVG	
Navigation Equipment:	
GPS, EGI, VOR, and TACAN navigation sets	
Additional Capabilities:	
*Can be configured with 2,400 gallons of usable fuel for a mobile forward area refueling system (Fat Cow) Fuel. Capacity: 1,028 gallons. Can drop 2,000 gallons of water during water bucket operations. 150-foot rescue hoist can lift up to 600 pounds through the center cargo hatch (-28.5 ft for cable routing in cabin.) May load litters directly to the floor or transport up to 31 ambulatory patients for aerial CASEVAC.	
Limitations:	
Cruise speed is decreased when conducting external load operations.	
CASEVAC-casualty evacuation EGI-embedded global positioning system inertial navigation unit GPS-global positioning system	NVG-night vision goggle VOR-very high frequency omnidirectional range. COOLS-cargo ON/OFF loading system TACAN-tactical air navigation system
Note. *Varies with environmental conditions and mission factors.	

MQ-1C GRAY EAGLE CHARACTERISTICS

5-6. The MQ-1C (figure 5-4, page 112) and MQ-1C Extended Range Gray Eagle (figure 5-5, page 112) is a multi-mission, multi-payload system whose primary mission is to provide dedicated, mission-configured UAS support to division combat aviation, fires, and battlefield surveillance brigades, BCTs, and other Army and joint force units. It is capable of long endurance, near- real-time reconnaissance and precision attack. Gray Eagle companies are organic to the CAB and the military intelligence aerial exploitation brigade. Gray Eagles may team with CAB manned aircraft or operate autonomously in support of ground force commander objectives and information requirements.

5-7. Table 5-4 (page 113) outlines air vehicle characteristics. More information can be found in the appropriate technical manual.

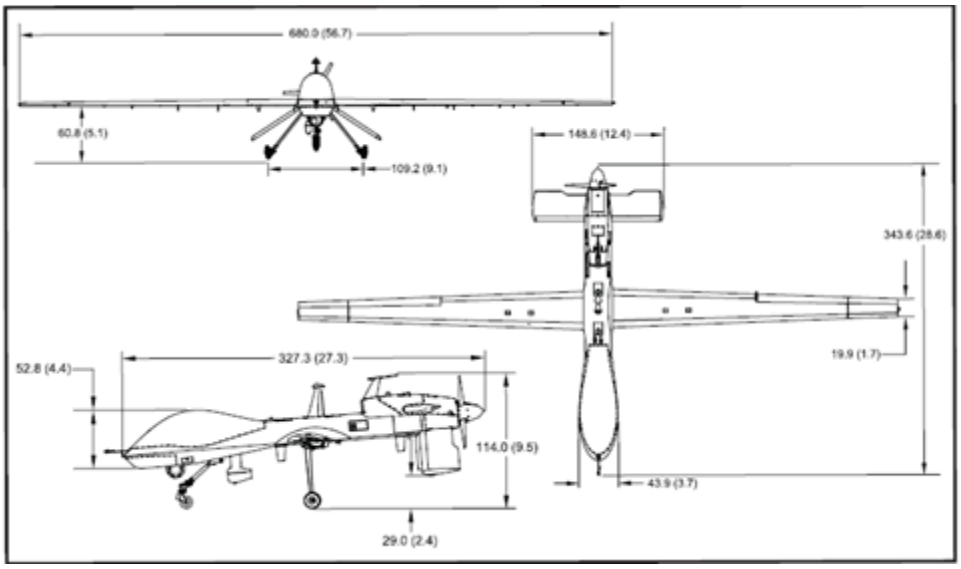

Figure 5–4. MQ-1C Gray Eagle unmanned aircraft

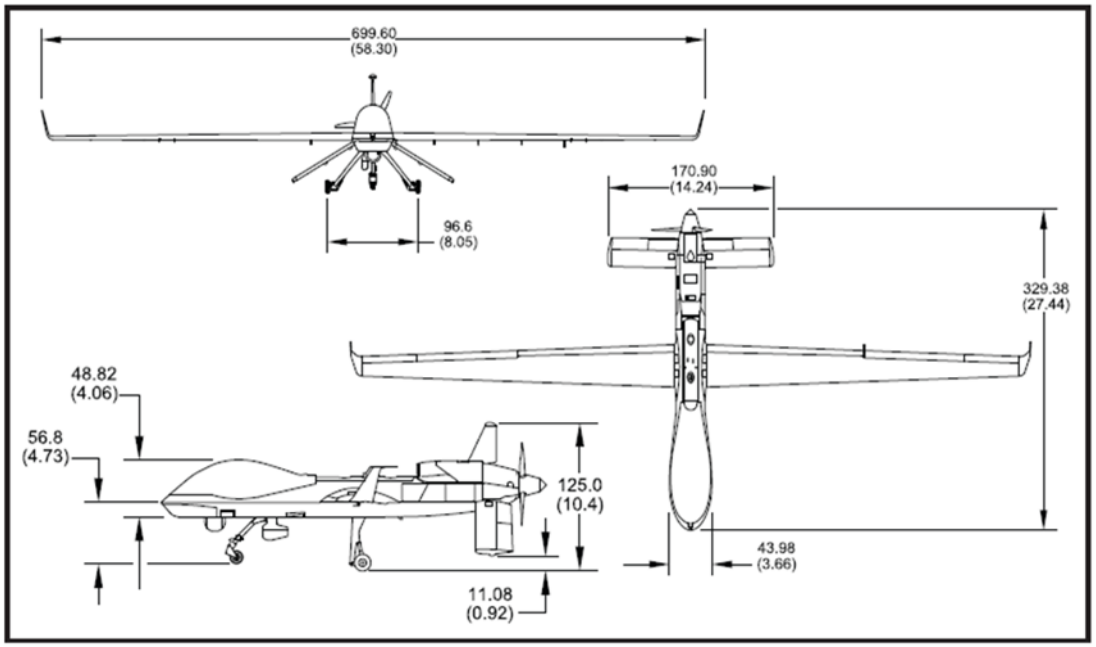

Figure 5–5. MQ-1C Gray Eagle unmanned aircraft extended range

Table 5–4. MQ-1C Gray Eagle unmanned aircraft characteristics

Specifications:	
Fuselage Length	27.3 feet/27.44 feet GE-ER
Height	9.5 feet/10.4 feet GE-ER
Main Wingspan	56.7 feet/58.3 feet GE-ER
Endurance	22+ hrs. without armament/40+ hrs. GE-ER
Propulsion	Heavy fuel engine 2.0 Liter
Maximum Gross Take-Off Weight	3,600 lbs./4200 lbs. GE-ER
Maximum Altitude	25,000 feet above mean seal level
Specifications:	
Runaway Requirement	4500 feet at 9000 feet density altitude; hard surface only
Cruise Airspeed	80 knots*
Max Continuous Airspeed	130 knots
Normal Fuel Endurance	22 hours/40 hours
Armament:	
4 Hellfire missiles	
Optics:	
Electro-optical, IR, laser pointer, laser rangefinder, laser designator, laser spot tracker	
Datalink Equipment:	
Ku SATCOM, Ku TCDL	
Additional Capabilities:	
SAR, GMTI, other electronic capabilities	
Limitations:	
Aircraft endurance is reduced when armed with HELLFIRE missiles.	
Note. *Varies with environmental conditions and mission factors.	
ER- extended range GMTI–ground moving target indicator	IR–infrared SAR–synthetic aperture radar	SATCOM–satellite communication TCDL–tactical common data link

5-8. The MQ-1C Gray Eagle UAS is used in support of reconnaissance and surveillance requirements. The MQ-1C can be outfitted with the AGM-114 HELLFIRE missile for attacking selected targets. The MQ-1C uses a laser rangefinder and a laser designator, which is used to determine the range to the target and to designate targets for delivery of laser-guided munitions. The MQ-1C aircraft can carry the AGM-114 P+ and AGM-114R/R2 series of missiles. The AGM-114R incorporates an integrated blast fragmentation sleeve warhead which provides the commander with three capabilities: a high explosive anti- tank capability with a pre-cursor charge, a blast fragmentation capability for light vehicles and personnel, and a programmable delay to allow the warhead to penetrate a structure, maximizing the overpressure feature of the warhead before detonation occurs. The AGM-114R2 additionally incorporates a height of burst capability which detonates the warhead prior to the missile impacting the target. For more information on Gray Eagle armament systems, refer to TC 3-04.3.

C-12 SERIES AIRCRAFT

5-9. The C-12 series of aircraft are pressurized, low wing, all metal aircraft powered by two PT6A-42 turboprop engines (figure 5-6, page 114). The primary mission of the aircraft is to provide scheduled or unscheduled air transportation of passengers and/or cargo in any area of the world. It has all-weather capability and is distinguishable by its slender, streamlined engine nacelles, four-blade propellers, T-tail, and dual aft body strakes. Table 5-5 (page 114) depicts characteristics of the C-12. More information can be found in the appropriate technical manuals.

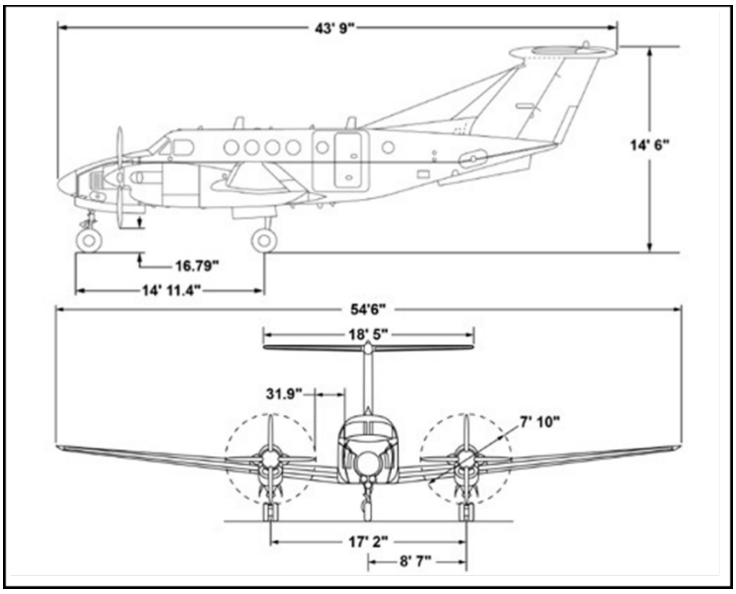

Figure 5–6. C-12V aircraft

Table 5–5. C-12V aircraft specifications

Specifications:	
Fuselage Length	43 feet 9 inches
Height	14 feet 6 inches
Main Wingspan	54 feet 6 inches
Propulsion	2x PT6A-42 turboprop engines
Maximum Gross Take-Off Weight	14,000 pounds
Maximum Ceiling	35,000 feet mean sea level
Cruise Airspeed	259 knots
Range	3,658 kilometers

C-37 AIRCRAFT

5-10. The C-37 performs air movement of senior support personnel (Chief of Staff and Service Secretary) and high priority cargo only (figure 5-7 and table 5-6, page 115). The normal crew consists of a pilot, copilot, flight engineer, and two flight stewards. The cabin is designed with a distinguished visitor cabin, passenger cabin, galley, lavatory, and baggage/cargo compartment.

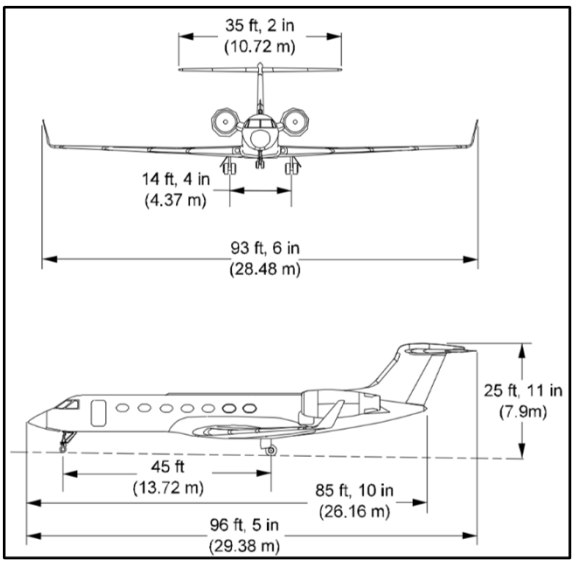

Figure 5–7. C-37 aircraft

Table 5–6. C-37 aircraft specifications

Specifications:	
Fuselage Length	96 feet 5 inches
Height	25 feet 11 inches
Main Wingspan	93 feet 6 inches
Propulsion	2x Rolls Royce, BR 700-710A1-10 or -11
Maximum Gross Take-Off Weight	91,000 pounds
Maximum Ceiling	51,000 feet mean sea level
Cruise Airspeed	480 knots true airspeed
Range	*6,750 nautical miles
Note: *Varies with weight, load, and environmental conditions	

RC-12 GUARDRAIL

5-11. Guardrail is a theater-level airborne signals intelligence collection and location system (figure 5-8 and table 5-7, page 116). Employed against threat emitters, the system provides near real-time signals intelligence collection and target intelligence to warfighters within the theater area. The aircraft crew consists of two pilots, and all mission equipment is operated remotely from home station.

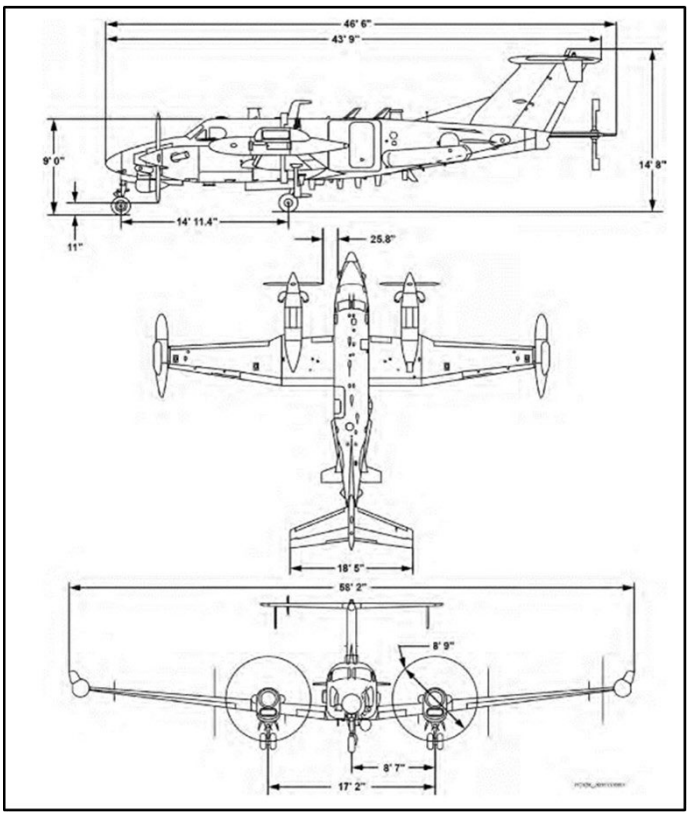

Figure 5–8. RC-12 aircraft

Table 5–7. RC-12 aircraft specifications

Specifications:	
Fuselage Length	46 feet 6 inches
Height	14 feet 8 inches
Main Wingspan	58 feet 2 inches
Propulsion	2x PT6A-42 turboprop engines
Maximum Gross Take-Off Weight	16,200 pounds
Maximum Ceiling	35,000 feet mean sea level
Cruise Airspeed	240 knots true airspeed
Range	*1,200 nautical miles
Note: *Varies with weight, load, and environmental conditions	

MC-12 ENHANCED MEDIUM ALTITUDE RECONNAISSANCE AND SURVEILLANCE SYSTEM

5-12. The MC-12 enhanced medium altitude reconnaissance and surveillance system aircraft is capable of both full-motion video and other intelligence collection (figure 5-9 and table 5-8, page 117). The crew consists of two pilots and two payload operators. The aircraft has an extensive communications capability to allow a wide variety of missions.

5-13. The mission capabilities of this aircraft consist of reconnaissance, pattern analysis, change detection, target locating and tracking, and wide-area reconnaissance and surveillance. The mission tasking is given by theater, but the aircraft can be tasked down to individual units if needed.

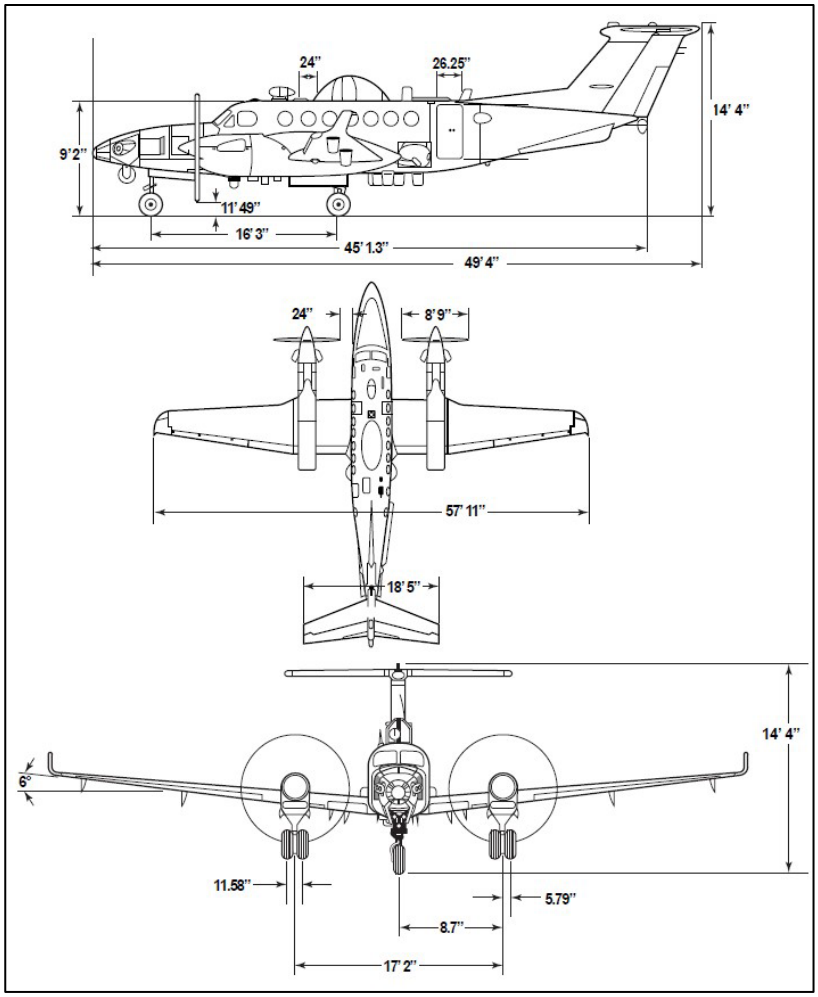

Figure 5–9. MC-12 aircraft

Table 5–8. MC-12 aircraft specifications

Specifications:	
Fuselage Length	49 feet 4 inches
Height	14 feet 4 inches
Main Wingspan	57 feet 11 inches
Propulsion	2x PT6A-60A turboprop engines
Maximum Gross Take-Off Weight	16,500 pounds
Maximum Ceiling	35,000 feet mean sea level
Cruise Airspeed	245 knots indicated airspeed
Range	*1,400 nautical miles
Note. *Varies with weight, load, and environmental conditions	

EO-5C AIRBORNE RECONNAISSANCE LOW

5-14. The EO-5C performs aerial intelligence collection missions (figure 5-10 and table 5-9, page 118). The EO-5C is an aerial platform equipped with signal intelligence, imagery intelligence, and synthetic aperture radar/moving target indicator mission payloads. The crew consists of a pilot, copilot, and up to six military analysts.

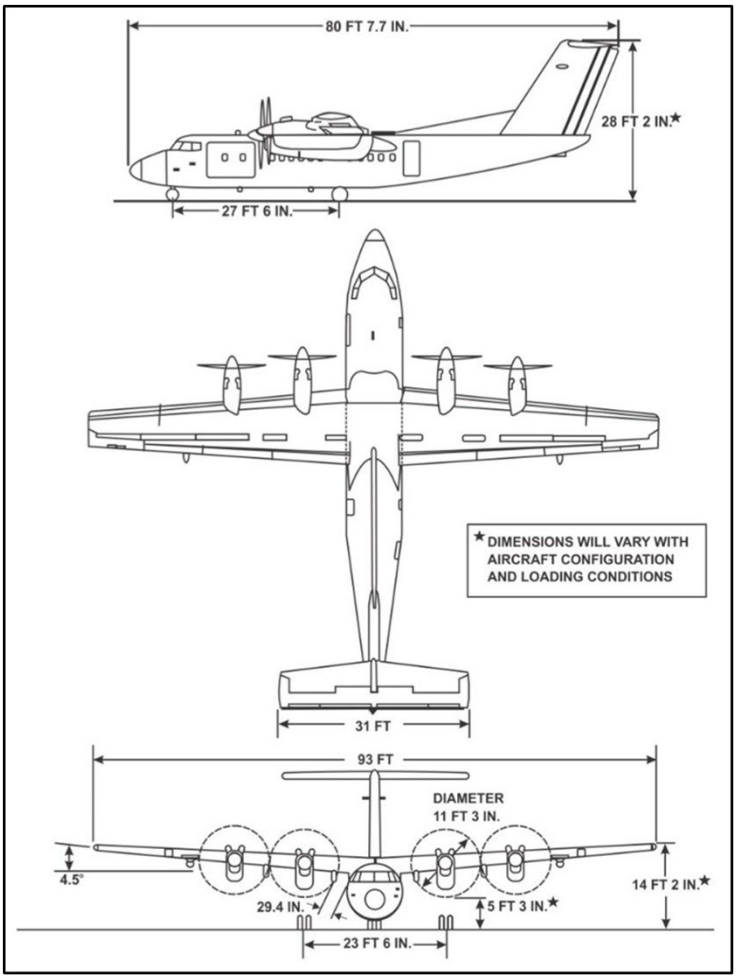

Figure 5–10. EO-5C aircraft

Table 5–9. EO-5C aircraft specifications

Specifications:	
Fuselage Length	80 feet 7 inches
Height	28 feet 2 inches
Main Wingspan	93 feet 0 inches
Propulsion	4x PT6A-50 turboprop engines
Maximum Gross Take-Off Weight	47,000 pounds
Maximum Ceiling	25,000 feet mean sea level
Cruise Airspeed	231 knots true airspeed
Range	*1,500 nautical miles
Note. *Varies with weight, load, and environmental conditions	

UC-35 AIRCRAFT

5-15. The UC-35 is a twin-engine turbofan medium range aircraft. Its primary mission is air movement of passengers and cargo (figure 5-11 and table 5-10, page 119).

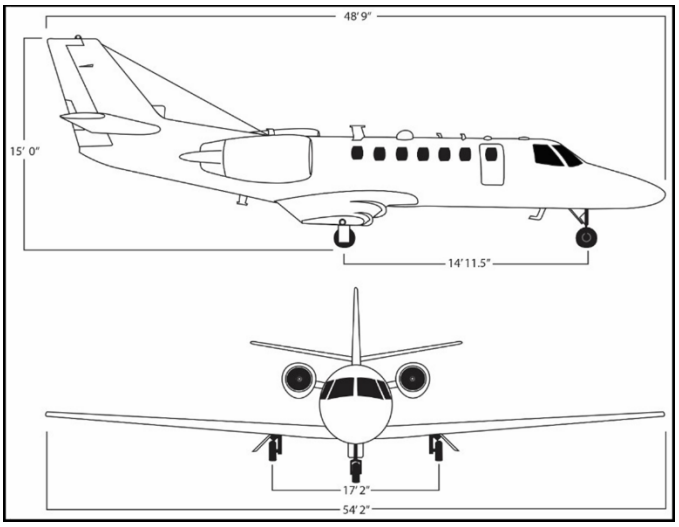

Figure 5–11. UC-35 aircraft

Table 5–10. UC-35 aircraft specifications

Specifications:	
Fuselage Length	48 feet 9 inches
Height	15 feet 0 inches
Main Wingspan	54 feet 2 inches
Propulsion	2x JT15D-5D turbofan jet engines
Maximum Gross Take-Off Weight	16,300 pounds
Maximum Ceiling	45,000 feet mean sea level
Cruise Airspeed	430 knots
Range	2,925 kilometers

SECTION II – AIR TRAFFIC SERVICES SYSTEMS

5-16. Air traffic service systems are discussed in the following paragraphs.

AN-MSQ-135 MOBILE TOWER SYSTEM

5-17. Organic to the air traffic company in the CAB and the airfield operations battalion, the AN/MSQ-135 mobile tower system is a rapid-deployable ATC tower and airfield lighting system that quickly establishes ATS for arrival, departure, and ground operations. Equipment is included to remotely command airfield operations, including control of existing airfield lighting. Controllers manage airspace from the surface to 10,000 feet out to a 5-mile radius. When assisted by appropriate navigation aids (not organic), the AN/MSQ-135 provides ATS in all-weather conditions, night or day, for military and civilian aircraft. The AN/MSQ-135 is transportable by all standard land, rail, and sea methods. Additionally, the complete AN/MQS-135 is transportable by C-17 and larger FW aircraft. However, only the ATC tower, airfield lighting system generator/equipment trailer, airfield lighting system light/equipment trailer, and airfield lighting system movers 1 and 2 can be sling-loaded by CH-47 and larger RW aircraft. Figure 5-12, page 120, depicts an AN/MSQ-135. More information can be found in ATP 3-04.6.

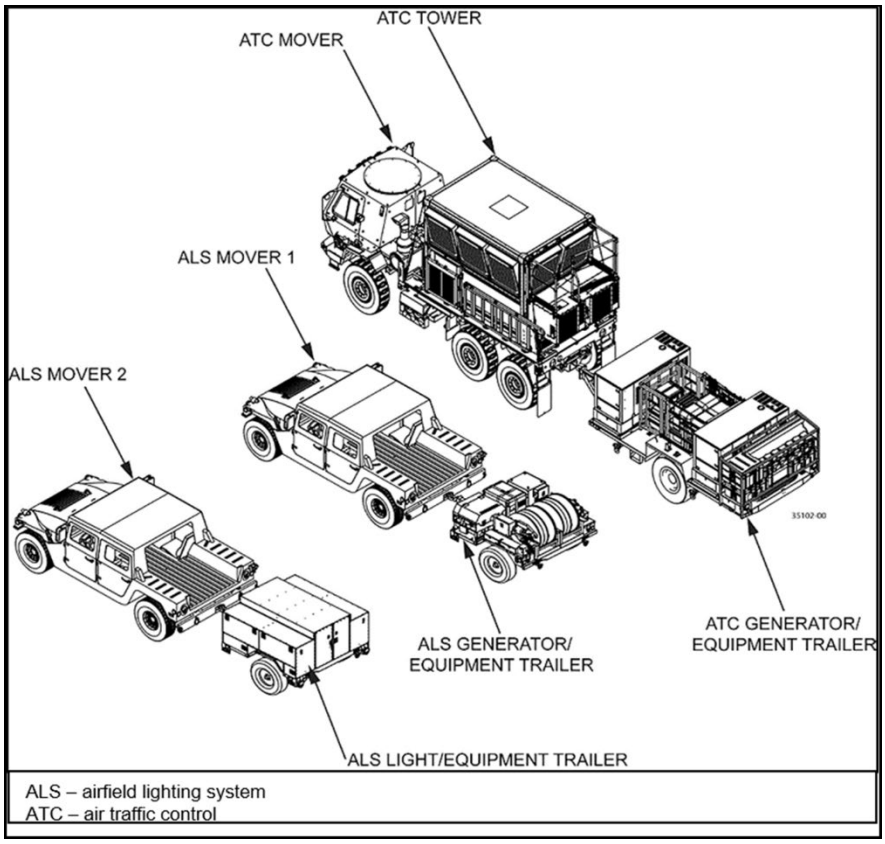

Figure 5–12. Mobile tower system

AN/TPN-31 AIR TRAFFIC NAVIGATION, INTEGRATION, AND COORDINATION SYSTEM

5-18. The AN/TPN-31 (figure 5-13, page 121) normally deploys along with a tower system as part of initial or follow-on forces to establish an all-weather instrument landing capability at landing sites/airfields within the joint operations and theater areas of responsibility. The air traffic navigation, integration, and coordination system (ATNAVICS) can provide ground-controlled approach operations within 60 minutes of arrival in an AO. ATNAVICS directly interfaces by voice and digital data links with the tower systems and tactical airspace integration system (TAIS) of the CAB, TAB, AOB, division, corps, and theater airspace elements for airspace data supporting current operations. When required, the ATNAVICS integrates into the national/host-nation airspace system and complies with Federal Aviation Administration, International Civil Aviation Organization, North Atlantic Treaty Organization, and the European Organization for the Safety of Air Navigation standards for stability and civil support operations. Although the ATNAVICS is a tactical system, its inherent flexibility also allows for its use in temporary or long-term, fixed base environments.

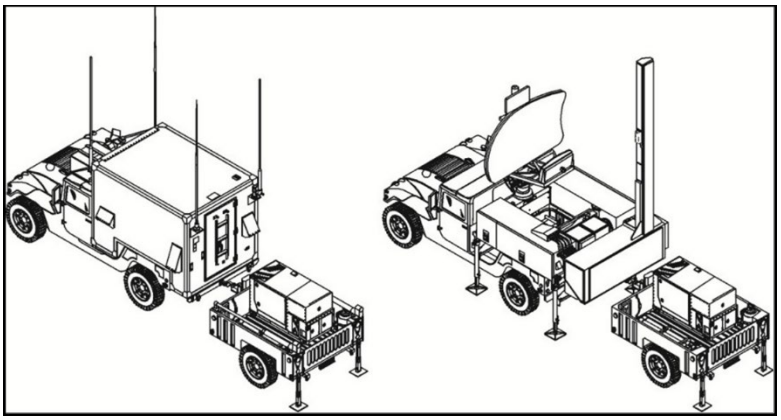

Figure 5–13. Air traffic navigation, integration, and coordination system

5-19. The ATNAVICS provides area surveillance and aircraft identification capability for a 25-nautical mile radius. The system consists of three integrated radar: airport surveillance radar, precision approach radar, and secondary surveillance radar identification, friend or foe with seven air traffic controllers. The ATNAVICS is transportable by C-130 or larger, intra-theater, FW cargo aircraft for total system deployment (prime movers, shelters, radar group, and generators). The ATNAVICS shelter, sensor pallet, and generators are externally air transportable by the CH-47 or larger helicopters. More information can be found in ATP 3-04.6.

AN/TSQ-221 TACTICAL AIRSPACE INTEGRATION SYSTEM

5-20. The AN/TSQ-221 (figure 5-14, page 122) is a digital and analog system for airspace control planning, operations, and ATS area support. It provides automation assistance to the full range of airspace planning, enhances airspace management operations (real-time), and ensures connectivity between all ATS assets and airspace users in theater. TAIS teams can provide airspace information center operations within four hours upon of arrival in an AO. More information can be found in ATP 3-04.6.

5-21. TAIS is the direct link to the theater battle management core system located within the air operations center. The web airspace deconfliction application is the joint airspace management tool for planning and execution of the joint force airspace requirements. It integrates into C2 systems, enabling enhanced compatibility with joint, multinational, and civil command, control, communication, and intelligence systems.

5-22. TAIS is a mobile system with two integrated workstations and two ruggedized tablets. Communications include LOS- and satellite-based voice communication systems, GPS, fax, improved data modem, and secure telephone unit III. It maximizes synchronization of battlefield airspace supporting force operations and minimizing fratricide.

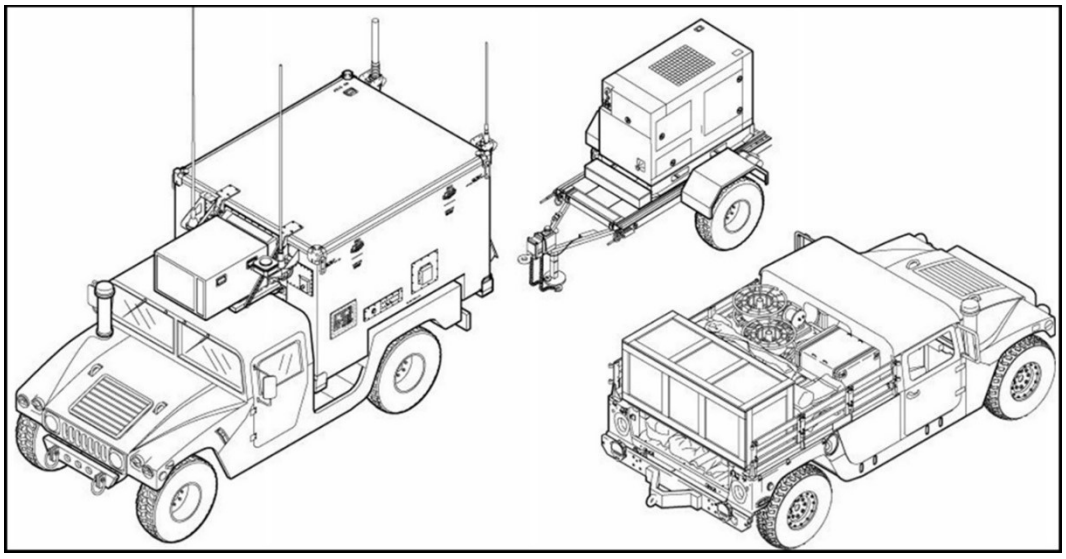

Figure 5–14. Tactical airspace integration system

AN/TSQ-198B TACTICAL TERMINAL CONTROL SYSTEM

5-23. The AN/TSQ-198 Tactical Terminal Control System (figure 5-15) is a high mobility multipurpose wheeled vehicle-mounted ATC system for the tactical aviation control team mission. The tactical terminal control system enables visual flight rules control of air traffic at drop zones, LZs, PZs, FARPs/AFARs, initial airfields, and temporary helicopter operating areas. It is the system of choice for initial entry operations for localized high volume aviation operations demand ATC as a risk management control. It provides positive and or procedural ATS control within 15 minutes of arrival. Four air traffic controllers are assigned to operate the AN/TSQ-198 for a 24-hour period. Major communications components include the AN/VRC-114 multiband radios and AN/VRC-104 high frequency radio. The communications system can convert to a portable battery operated manpack configuration or be remoted from the vehicle up to 1 kilometer. Blue Force Tracker is mounted adjacent to the radio set control providing on-the-move, near-real-time horizontal and vertical information exchange using a GPS. The GPS connects to wireless/satellite-based networks to display its own location, report its location to other systems, and transmit, receive, and display situational awareness and C2 data. The AN/TSQ-198 is sling-loadable by a UH-60 or similar helicopter, or it can be transported in a single C-130 aircraft load. More information can be found in ATP 3-04.6.

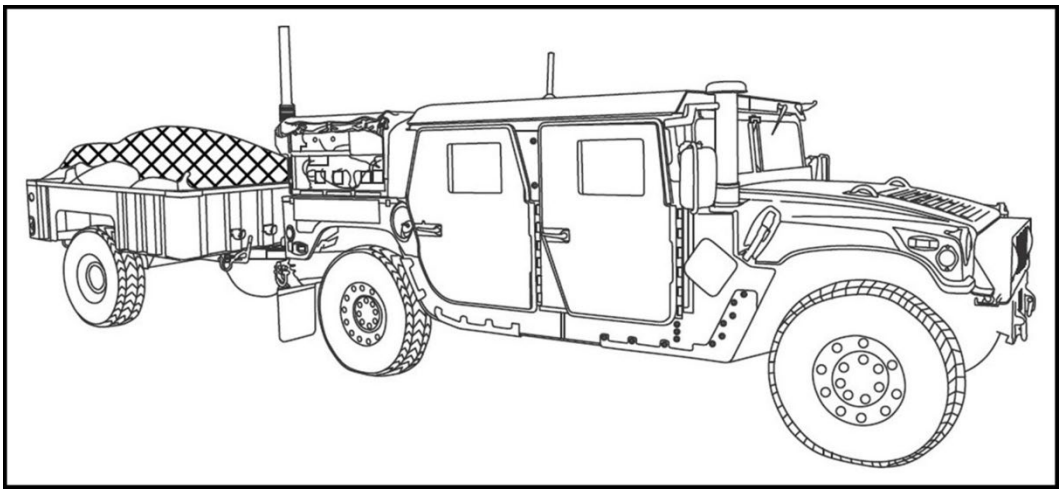

Figure 5–15. Tactical terminal control system

Appendix A
Aviation Operations and Planning Resources

A-1. Aviation operations and planning resources are found in the aviation ATPs and TCs. In preparation for working directly with aviation units, ATP 3-04.1, TC 3-04.5, and the Aviation Handbook provide a foundation for planning, execution, and common checklists, forms, briefs, and products used in aviation operations.

A-2. ATP 3-04.1 provides techniques for planning, preparation, and execution of aviation tasks. It provides problem-solving guidance for company-level leaders throughout Army Aviation as they plan, prepare, execute, and assess these tasks. It also provides considerations for expeditionary aviation operations. The primary audience for ATP 3-04.1 is junior leaders at brigade level and below, but it is also applicable to other members of the profession of arms.

A-3. ATP 3-04.1 and the Aviation Handbook contain support requests, forms, briefs, checklists, and documents most often used during aviation operations. These documents include the array of required and optional forms that assist in the mission planning process and used during mission execution. The Aviation Handbook is Annex A of the Aviation Branch SOP developed to rapidly consolidate operations, techniques, and supporting forms and checklists; these will be incorporated into ATP 3-04.1.

A-4. Support requests, briefs, checklists, and kneeboard cards used for planning and execution of aviation operations and are found in ATP 3-04.1, TC 3-04.5, and the Aviation Branch SOP, Annex A.

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Appendix B
Risk Management

B-1. Aviation operations are inherently risky even during routine peacetime or limited contingency operations. In large-scale combat operations, many aviation operations become high-risk, high-reward missions. Commanders must appropriately mitigate risks to provide continued support to the ground maneuver commander.

B-2. Risk management is a critical process that contributes to the endurance of an aviation force. It identifies hazardous environments and helps commanders eliminate, reduce, or minimize risk associated with mission and operational requirements to protect assets. It is integral throughout the planning process, and directly contributes to the availability of aircrews, aircraft, and the associated equipment that are critical to mission support and accomplishment.

B-3. Commanders balance between protecting the force and accepting risks to achieve military objectives. Commanders must adequately plan and prepare for operations based on a comprehensive understanding of the OE. Commanders collaborate and dialog with subordinates when deciding how much risk to accept and how to minimize the effects of risk. It is important to remember that accepting risk is a function of command, and it is a key planning consideration. The commander alone determines the level of acceptable risk with respect to aspects of operations. This level of risk should be expressed in the commander's guidance, incorporated into all plans and orders, and clearly understood by subordinate leaders.

B-4. In large-scale combat operations, commanders of aviation units must continually fight for information to see, understand, create, and exploit advantages. Aviation missions are frequently conducted without perfect information, and understanding the threats associated with the enemy, the terrain, and the weather all inform a commander's level of risk-acceptance. Table B-1 lists examples of considerations that commanders should review when identifying risks. For more information about risk management, refer to ATP 5-19.

Table B–1. Aviation risk considerations

Mission
How complex is this mission? (This helps identify which leaders should participate and where they should be located)
How does the unit move into positions of advantage without being heavily disrupted by enemy assets? (Units observed by enemy forces can be engaged. Units engaged by an enemy on the enemy's terms can be destroyed.)
Are adjacent units operating from common procedures? (Shared understanding of terms and common control measures reduces risk of fratricide.)
Enemy
What threat systems must be avoided or destroyed to be successful? (This helps identify high payoff and high value targets.)
Where and when could enemy deception operations create vulnerabilities to aviation operations? (The commander must evaluate available courses of action against known enemy deception capabilities.)
Terrain and Weather
How challenging are terrain conditions in aviation assembly areas? (Degraded visual environments from dust or snow increase chances of an accident upon takeoff or landing.)
What is the weather effect on friendly and enemy operations? (Operations in limited visibility may reduce tactical risk but increase the accidental risk at the same time.)

Table B–1. Aviation risk considerations, cont'd

Troops and Support Available
Is sufficient combat power available to achieve the commander's intent? (Prolonged operations require additional aircraft maintenance and reconstitution; commanders must balance tempo with mass.)
How does the unit balance continued operations in demanding environments with increasing fatigue of aircrew members and aircraft maintainers? (Increased fatigue from extended operations without effective recovery operations increases the risk of an aviation accident or improper maintenance.)
What protection is available for aviation units conducting extended maintenance operations? (Aircraft may be unable to relocate quickly if they are being maintained in a forward location. Protection should be a consideration for any static location.)
How does the unit incorporate replacement personnel into units during reconstitution? (Untrained replacements may not have the same knowledge of specific procedures in places such as forward arming and refueling points or aircraft maintenance areas.)
Time Available
How much preparation time is available for this mission? How much preparation time do subordinate units have to plan and prepare? (This helps identify risks from tempo.)
What maintenance inspections are being waived due to operational tempo or sustainment challenges? (Waived inspections may increase risk of an accident or sub-standard system performance.)
Civil Considerations
What civilian population is near the area of operations? (This may help identify risks due to observation or collateral damage.)

Appendix C

Special Operations Aviation

INTRODUCTION

C-1. Special operations aviation provides special operations forces organic air capabilities for aerial infiltration, exfiltration, resupply, and precision fire support. Army Special Operations Aviation elements are organized, trained, and equipped to conduct air mobility, close combat attack, and other special air operations in all environments and in the most challenging conditions. Command and control along with training and readiness oversight are provided by the United States Army Special Operations Aviation Command and the 160th Special Operations Aviation Regiment (Airborne).

ORGANIZATION

C-2. Army Special Operations Aviation (ARSOA) is commanded by the United States Army Special Operations Aviation Command (USASOAC) headquartered at Fort Liberty, North Carolina (figure C-1). USASOAC organizes, mans, resources, and equips Army special operations aviation units to provide responsive aviation support to special operations. This headquarters functions as the United States Army Special Operations Command (also known as USASOC) aviation staff proponent. Its organizational structure consists of Technology Applications Program Office, the USASOC Flight Company, a Systems Integration Management Office, the ARSOA Aviation Maintenance Directorate, a Special Operations Aviation Training Battalion, and the 160th Special Operations Aviation Regiment (Airborne).

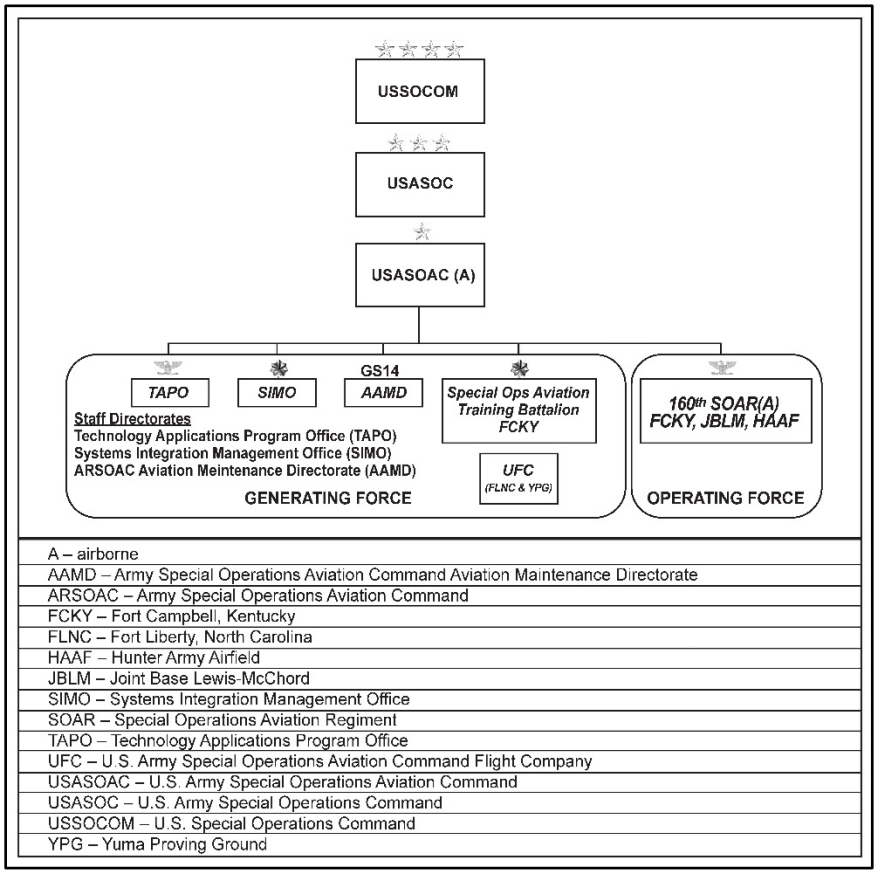

Figure C–1. The United States Army Special Operations Aviation Command (Airborne) organization

C-3. The 160th Special Operations Aviation Regiment (Airborne) (figure C-2) organizes, trains, and employs Army special operations aviation forces worldwide to support contingency missions and the warfighting commanders. The regiment's highly modified rotary-wing aircraft include the AH/MH-6M Little Bird, the MH-60M Blackhawk, and the MH-47G Chinook. Regimental units can conduct and support special operations missions for theater special operations command until a special operations joint task force or a joint special operations task force (JSOTF) is established. The regiment can be task-organized based on expected missions, supported unit requirements, the environmental conditions in the theater of operations, and sustainment requirements. (See ATP 3-76 for more information on USASOAC and the 160th Special Operations Aviation Regiment.)

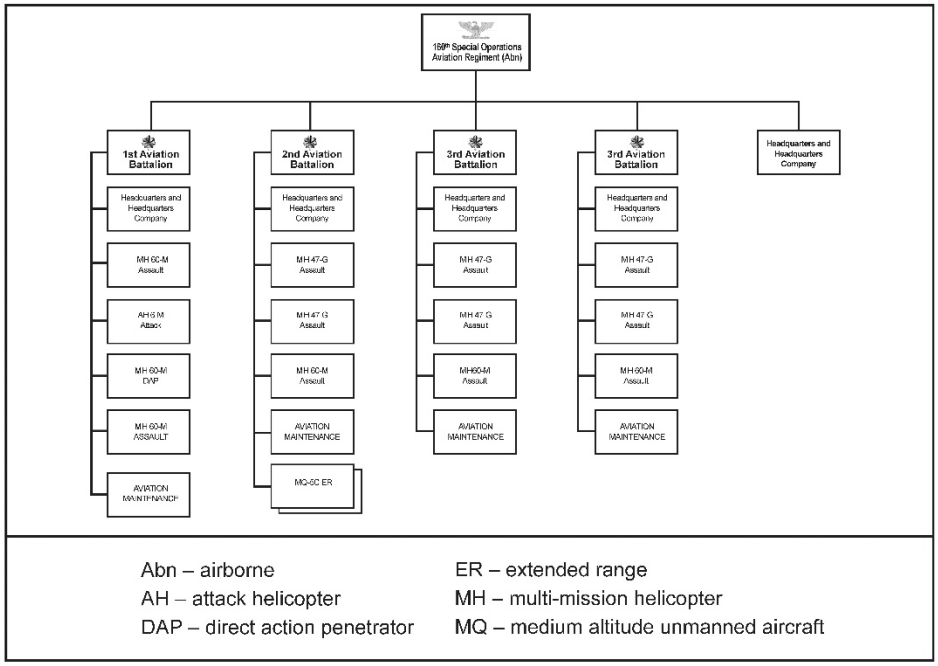

Figure C–2. 160th Special Operations Aviation Regiment (Airborne) organization

FUNCTIONS

C-4. ARSOA is tasked to conduct and support special air operations by penetrating hostile and denied airspace. ARSOA units can operate in harsh environments and across the competition continuum and range of military operations. They also support special operations forces in conducting unified action partner, liaison, and coordination activities to support the USASOC commander and the combatant commander's concept of operations. The participation of ARSOA in the Army special operations forces core activities varies based upon the type of conflict, the environment, and the scope of the operation. (See FM 3-05 for more information on USASOAC and the 160th Special Operations Aviation Regiment.)

SUPPORT OF ARMY SPECIAL OPERATIONS FORCES CORE ACTIVITIES

C-5. ARSOA can support all special operations forces core activities. ARSOA supports these core activities predominantly in a joint environment and may support the United States military conventional forces, multinational forces, or other agencies. ARSOA's contributions are supported by ever-evolving tactics, techniques, procedures, and technology. These are as follows:

- Infiltrate, sustain, and exfiltrate United States special operations forces and other selected personnel.
- Insert and extract special operations forces land and maritime assault vehicles and vessels.
- Conduct direct action, close combat attack, and close air support operations using organic attack helicopters to provide aerial firepower and terminal guidance for precision munitions, unilaterally or with other special operations forces elements.

- Provide forward air controller (airborne) for United States close combat attack and close air support, multinational close air support, and indirect fires.
- Conduct special reconnaissance missions.
- Conduct intelligence, surveillance, reconnaissance, and target acquisition tasks.
- Conduct limited electronic warfare.
- Recover personnel or sensitive materiel.
- Conduct assisted evasion and recovery when dedicated combat search and rescue assets are unavailable.
- Conduct combat search and rescue as a part of the special operations forces component apportioned to the Joint Personnel Recovery Center when the mission requires capabilities above and beyond conventional theater combat search and rescue assets.
- Perform emergency air evacuation of special operations forces personnel during the conduct of special operations.
- Conduct strategic self-deployment of all aerial refuel-capable helicopters.
- Conduct special operations joint maritime operations.
- Conduct special operations water insertion and recovery operations.
- Support and facilitate ground and aerial command, communication and computer systems, and reconnaissance and intelligence operations.
- Provide the command element for special operations aviation assets and attached conventional aviation assets supporting special operations forces.

Note. See ATP 3-76 for more information on USASOAC and the 160th Special Operations Aviation Regiment.

EMPLOYMENT CONSIDERATIONS

C-6. ARSOA provides special operations forces the capability to penetrate hostile or denied territory. To conduct special operations core activities, ARSOA units utilize specialized aircraft with sophisticated state-of-the-art special mission equipment. ARSOA aircrews undergo intense training in the tactical employment of the aircraft and the execution of special operations aviation responsibilities. ARSOA units are postured to conduct operations across the competition continuum integrating aspects of conventional and irregular warfare to create multiple dilemmas for enemy forces and relative advantages for United States forces in the physical, information, and human dimensions. Due to ARSOA's level of training and specialized equipment, it engages high-payoff targets to support the accomplishment of combatant commander, JFC, and special operations joint task force objectives. ARSOA exploits the darkness, adverse weather conditions, and extended range and navigation systems of their aircraft to penetrate hostile territory from unexpected avenues of approach in the execution of special operations missions.

KEY OPERATIONAL CONSIDERATIONS

C-7. There are several key factors that must be addressed before the deployment of ARSOA to an operational area. The formalization of command relationships must be clearly articulated and understood. To help in planning and communication, ARSOA assigns a liaison officer to the controlling command structure. The liaison officer coordinates communications, sustainment, and mission requirements. Liaison officers provide subject-matter expertise on ARSOA's capabilities to exploit their full capabilities and to ensure mission success.

JOINT OPERATIONS AND RELATIONSHIPS

C-8. Continental United States-based ARSOA units are normally under the combatant command of the Commander, United States Special Operations Command (USSOCOM). When directed, this commander provides continental United States-based ARSOA forces to a combatant commander. The combatant commander normally exercises combatant command (command authority) of assigned and operational control of attached special operations forces through a Theater Special Operations Command (TSOC) commander. When a combatant commander establishes and employs multiple joint task forces and independent task forces concurrently, the TSOC or JSOTF commander may establish and employ multiple

joint special operations task forces to manage ARSOA assets and accommodate joint task force or task force special operations requirements. A JSOTF may also establish a joint special operations air component to place all aviation assets under a single command for the operation. This component allows a single air commander to work with the special operations task forces to maximize the support of available aviation assets to the special operations task forces. ARSOA typically operates as part of a joint special operations air component but can also deploy in direct support to a special operations joint task force or a JSOTF depending on mission requirements. The combatant commander, as the common superior, will normally establish support or tactical control command relationships between the JSOTF commanders and joint task force or task force (TF) commanders. (See ATP 3-76 for more information on USASOAC and the 160th Special Operations Aviation Regiment.)

AIRCRAFT CHARACTERISTICS

C-9. Personnel should reference ATP 3-76, Annex B, for more information.

C-10. Other than the information provided in this annex, information from FM 3-05 and ATP 3-76 are releasable ***only*** to individuals from foreign countries on a case-by-case basis when approved by SOCOE foreign disclosure authority.

Glossary

SECTION I – ACRONYMS AND ABBREVIATIONS

AB	attack battalion
ABTF	aviation battalion task force
ACM	airspace coordinating measure
ACS	air cavalry squadron
ADAM	air defense airspace management
AE	aeromedical evacuation
***AFAR**	area for forward arming and refueling
AHB	assault helicopter battalion
AMC	aviation maintenance company
AMT	aviation maintenance troop
AO	area of operations
AOB	airfield operations battalion
ARNG	Army National Guard
ARSOA	Army Special Operations Aviation
ASB	aviation support battalion
ASC	aviation support company
ASTF	aviation squadron task force
ATC	air traffic control
ATNAVICS	air traffic navigation, integration, and coordination system
ATS	air traffic services
***AVCOE**	United States Army Aviation Center of Excellence
BAE	brigade aviation element
BCT	brigade combat team
C2	command and control
CAB	combat aviation brigade
CAC	command aviation company
CAS	close air support
CASEVAC	casualty evacuation
CBRN	chemical, biological, radiological, and nuclear
CP	command post
DART	downed aircraft recovery team
DCA	defensive counter-air
DOD	Department of Defense
DS	direct support
DSCA	Defense Support of Civilian Authorities

ECAB	expeditionary combat aviation brigade
EMS	electromagnetic spectrum
EW	electromagnetic warfare
FARP	forward arming and refueling point
FSC	forward support company
FW	fixed-wing
GPS	global positioning system
GS	general support
GSAB	general support aviation battalion
HHC	headquarters and headquarters company
HSS	health service support
IADS	integrated air defense systems
IPOE	intelligence preparation of the operational environment
IR	infrared
ISB	intermediate staging base
JAGIC	joint air-ground integration center
JFC	joint force commander
JSOTF	joint special operations task force
LNO	liaison officer
LOC	line of communications
LOS	line of sight
LZ	landing zone
MANPADS	manportable air defense system
MEDEVAC	medical evacuation
METT-TC (I)	mission, enemy, terrain and weather, troops and support available, time available, civil considerations, and informational considerations
MTF	medical treatment facility
***MUM-T**	manned unmanned teaming
OCA	offensive counter-air
OE	operational environment
OPCON	operational control
PIR	priority intelligence requirement
PR	personnel recovery
PZ	pickup zone
ROZ	restricted operations zone
RW	rotary wing
SAM	surface-to-air missile
SCAR	strike coordination and reconnaissance
SOP	standard operating procedure
SSB	security and support battalion
TAB-A	theater aviation brigade

TACON	tactical control
TAIS	tactical airspace integration system
TAOG	theater airfield operations group
TASMG	theater aviation sustainment maintenance group
TCF	tactical combat force
TUAS	tactical unmanned aircraft system
UAS	unmanned aircraft system
USAR	United States Army Reserve
USASOAC	United States Army Special Operations Aviation Command

SECTION II – TERMS

***Area for forward arming and refueling**

Temporary site developed to increase survivability, equipped with the proper resources, and deployed as far forward, or widely dispersed, as tactically feasible to provide fuel and ammunition necessary for the sustainment of aviation maneuver units in combat.

Aeromedical evacuation

The movement of patients under medical supervision to and between medical treatment facilities by air transportation. (JP 4-02)

Agility

The ability to move forces and adjust their dispositions and activities more rapidly than the enemy. (FM 3-0)

Air assault

The movement of friendly assault forces by rotary-wing or tiltrotor aircraft to engage and destroy enemy forces or to seize and hold key terrain. (JP 3-18)

Air movement

Air transport of units, personnel, supplies, and equipment including airdrops and air landings. See also airdrop; airland. (JP 3-36)

Airspace control

The exercise of delegated authority over designated airspace and users through control procedures and coordination measures to maximize operational effectiveness. (JP 3-52)

Airspace management

The planning, coordination, integration, and regulation of airspace by airspace control elements in support of airspace control. (JP 3-52)

Area reconnaissance

A type of reconnaissance operation that focuses on obtaining detailed information about the terrain or enemy activity within a prescribed area. (FM 3-90)

Army personnel recovery

The military efforts taken to prepare for and execute the recovery and reintegration of isolated personnel. (FM 3-50)

Attack

A type of offensive operation that defeats enemy forces, seizes terrain, or secures terrain. (FM 3-90)

Casualty evacuation

The unregulated movement of casualties aboard any vehicle. (JP 4-02)

***Close attacks**

Engagements conducted against enemy forces within direct fire range seeking to mass direct, indirect, and aerial fires against a friendly force.

Close operations

Tactical actions of subordinate maneuver forces and the forces providing immediate support to them, whose purpose is to employ maneuver and fires to close with and destroy enemy forces. (FM 3-0)

Combined arms

The synchronized and simultaneous application of arms to achieve an effect greater than if each element was used separately or sequentially. (ADP 3-0)

Command and control

The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. (JP 1)

Coordinating altitude

An airspace coordinating measure that uses altitude to separate users and as the transition between different airspace control elements. (JP 3-52)

Coordination level

A procedural method to separate fixed- and rotary-wing aircraft by determining an altitude below which fixed-wing aircraft normally will not fly. (JP 3-52)

Convergence

An outcome created by the concerted employment of capabilities from multiple domains and echelons against combinations of decisive points in any domain to create effects against a system, formation, decision maker, or in a specific geographic area. (FM 3-0)

Cover

A type of security operation done independent of the main body to protect them by fighting to gain time while preventing enemy ground observation of and direct fire against the main body. (ADP 3-90)

***Deep attack**

Attacks conducted against enemy forces out of direct fire range of friendly forces to set conditions for future operations.

Deep operations

Tactical actions against enemy forces, typically out of direct contact with friendly forces, intended to shape future close operations and protect rear operations. (FM 3-0)

Defeat mechanisms

The method[s] through which friendly forces accomplish their mission against enemy opposition. (ADP 3-0)

Depth

The extension of operations in time, space, or purpose to achieve definitive results. (ADP 3-0)

Destroy

A tactical mission task that physically renders an enemy force combat ineffective until it is reconstituted. (FM 3-90)

Direct Support

A mission requiring a force to support another specific force and authorizing it to answer directly to the supported force's request for assistance. (JP 3-09.3)

Disintegrate

To disrupt the enemy's command and control, degrading the synchronization and cohesion of its operations. (FM 3-0)

Dislocate

To employ forces to obtain significant positional advantage in one or more domains, rendering the enemy's dispositions less valuable, perhaps even irrelevant. (FM 3-0)

Endurance

The ability to persevere over time throughout the depth of an operational environment. (FM 3-0)

Forward arming and refueling point

A temporary facility, organized, equipped, and deployed to provide fuel and ammunition necessary for the employment of aviation maneuver units in combat. (JP 3-09.3)

General support

Support given to the supported force as a whole and not to any particular subdivision thereof. (JP 3-09.3)

Guard

A security task to protect the main force by fighting to gain time while also observing and reporting information and preventing enemy ground observation of and direct fire against the main body. Units conducting a guard mission cannot operate independently because they rely upon fires and functional and multifunctional support assets of the main body. (ADP 3-90)

Human dimension

Encompasses people and the interaction between individuals and groups, how they understand information and events, make decisions, generate will, and act within an operational environment. (FM 3-0)

Hybrid threat

The diverse and dynamic combination of regular forces, irregular forces, terrorist forces, or criminal elements unified to achieve mutually benefitting threat effects. (ADP 3-0)

Information collection

An activity that synchronizes and integrates the planning and employment of sensors and assets as well as the processing, exploitation, and dissemination systems in direct support of current and future operations. (FM 3-55)

Information dimension

The content, data, and processes that individuals, groups, and information systems use to communicate. (FM 3-0)

Integration

The arrangement of military forces and their actions to create a force that operates by engaging as a whole. (JP 1, Volume 1)

Isolate

To separate a force from its sources of support to reduce its effectiveness and increase its vulnerability to defeat. (ADP 3-0)

Kill box

A three-dimensional permissive fire support coordination measure with an associated airspace coordinating measure used to facilitate the integration of fires. (JP 3-09)

Main command post

A facility containing the majority of the staff designed to control current operations, conduct detailed analysis, and plan future operations. (FM 6-0)

Main effort

A designated subordinate unit whose mission at a given point in time is most critical to overall mission success. (ADP 3-0)

Maneuver

Movement in conjunction with fires. (ADP 3-0)

***Manned unmanned teaming**

The synchronized employment of Soldiers, manned and unmanned air and ground vehicles, robotics, and sensors to achieve an objective.

Movement to contact

A type of offensive operation designed to establish or regain contact to develop the situation. (FM 3-90)

Multidomain operations

The combined arms employment of joint and Army capabilities to create and exploit relative advantages to achieve objectives, defeat enemy forces, and consolidate gains on behalf of joint force commanders. (FM 3-0)

Operational control

The authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. (JP 1)

Operational environment

A composite of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander. (JP 3-0)

Operational framework

A cognitive tool to develop shared understanding and describe the commander's visualization of how Army Aviation operates in time, space, purpose, and resources in the concept of operations. (ADP 1-01)

Operational reach

The distance and duration across which a joint force can successfully employ military capabilities. (JP 3-0)

Physical dimension

The material characteristics and capabilities, both natural and manufactured, within an operational environment. (FM 3-0)

Rear operations

Tactical actions behind major subordinate maneuver forces that facilitate movement, extend operational reach, and maintain desired tempo. (FM 3-0)

Reconnaissance

A mission undertaken to obtain information about the activities and resources of an enemy or adversary, or to secure data concerning the meteorological, hydrographic, geographic, or other characteristics of a particular area, by visual observation or other detection methods. (JP 2-0)

Reconnaissance in force

A form of reconnaissance operation designed to discover or test the enemy's strength, dispositions, and reactions or to obtain other information. (FM 3-90)

Reserve

That portion of a body of troops that is withheld from action at the beginning of an engagement to be available for a decisive movement. (ADP 3-90)

Route reconnaissance

A directed effort to obtain detailed information of a specified route and all terrain from which the enemy could influence movement along that route. (ADP 3-90)

Screen

A security task that primarily provides early warning to the protected force. (ADP 3-90)

Security operations

Operations performed by commanders to provide early and accurate warning of enemy operations, to provide the forces being protected with time and maneuver space within which to react to the enemy, and to develop the situation to allow commanders to effectively use their protected forces. (ADP 3-90)

Security tasks

Tasks performed by commanders to provide early and accurate warning of enemy operations, to provide the forces being protected with time and maneuver space within which to react to the enemy, and to develop the situation to allow commanders to effectively use their protected forces. (ADP 3-90)

Space domain

The area above the altitude where atmospheric effects on airborne objects become negligible. (JP 3-14)

Special reconnaissance

Reconnaissance and surveillance actions conducted as a special operation in hostile, denied, or politically-sensitive environments to collect or verify information of strategic or operational significance, employing military capabilities not normally found in conventional forces. (JP 3-05)

Strike coordination and reconnaissance

An air mission to detect targets and coordinate or perform attack or reconnaissance on those targets. (JP 3-03)

Support area

In contiguous areas of operations, an area for any commander that extends from its rear boundary forward to the read boundary of the next lower level of command. (ADP 3-0)

Support area operations

Tactical actions securing lines of communications, bases, and base clusters that enable an echelon's sustainment and command and control. (FM 3-0)

Supporting effort

A designated subordinate unit with a mission that supports the success of the main effort. (ADP 3-0)

Tactical command post

A facility containing a tailored portion of a unit headquarters designed to control portions of an operation for a limited time. (FM 6-0)

Tactical control

The authority over forces that is limited to the detailed direction and control of movements or maneuvers within the operational area necessary to accomplish missions or tasks assigned. (JP 1)

Threat

Any combination of actors, entities, or forces that have the capability and intent to harm United States forces, United States national interests, or the homeland. (ADP 3-0)

Zone reconnaissance

A form of reconnaissance operation that involves a directed effort to obtain detailed information on all routes, obstacles, terrain, and enemy forces within a zone defined by boundaries. (FM 3-90)

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27 March 2025

By Order of the Secretary of the Army:

RANDY A. GEORGE
General, United States Army
Chief of Staff

Official:

MARK F. AVERILL
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